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ABSTRACT

The National Center for Education Statistics' annual statistical report on the condition of education in the United States is presented in two volumes for 1990. This volume covers postsecondary education, while the first volume addresses elementary and secondary education. Condition of education indicators (CEIs)--key data that measure the health of education, monitor important developments, and show trends between 1970 and 1989 in education--are provided. This volume includes the text, tables, and charts/graphs for each CEI plus technical supporting data, supplemental information, data sources, and glossaries. For student progression and outcomes, context, and resources, 30 CEIs are provided. Most CEIs examine relationships; show changes over time; compare subpopulations, regions, or states; or study traits of students from different backgrounds. New CEIs in 1990 include college enrollment rate for recent HS graduates, tuition charges as a fraction of income of families with children, proportion of young adults holding jobs, and distribution of college students by parents' education and income. This volume provides disparate data on persistence and completion rates; minorities and women in higher education; mathematics, science, and engineering; and returns to college education. (RLC)

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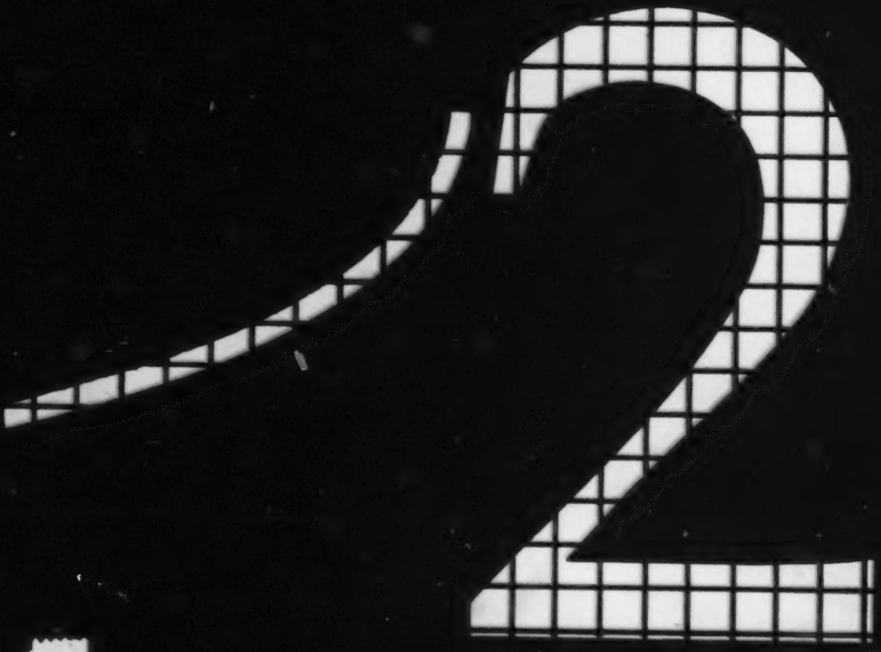
Volume 2

Postsecondary Education



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THE CONDITION OF EDUCATION
1990

Volume 2
Postsecondary Education

Nabeel Alsalam, Editor
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"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

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The National Center for Education Statistics (NCES) gathers and publishes information on the status and progress of education in the United States. The Federal authorization for these activities (with antecedents to 1867) states that the Center will "collect, collate, and from time to time, report full and complete statistics on the condition of education in the United States." The law, amended numerous times, now mandates an annual statistical report on the subject from the Commissioner of Education Statistics. This report is the 1990 edition of the *Condition of Education* prepared in response to the requirements of law.

This year, the condition of education "indicators"—key data that measure the health of education, monitor important developments, and show trends in major aspects of education—are published in two volumes. The first volume addresses elementary and secondary education and the second, postsecondary education. Each of these includes the text, tables, and charts for each indicator plus the technical supporting data, supplemental information, and data sources.

The indicators presented in these volumes have been developed through studies carried out by the Center as well as from surveys conducted elsewhere, both within and outside the Federal Government. Although indicators may be simple statistics, more often they are analyses—examining relationships; showing changes over time; comparing or contrasting subpopulations, regions, or States; or studying characteristics of students from different backgrounds. Data used for these indicators are the most valid and representative education statistics available in America today for the subjects and issues with which they deal.

The indicators portrayed here are selective. No more than 50 to 60 indicators are presented in each year's report. By contrast, the Center's other major annual compendium, *The Digest of Education Statistics*, includes more than 350 statistical tables, plus figures and appendices. These indicators represent a consensus of professional judgment on the most significant national measures of the condition and progress of education at this time, but tempered, necessarily, by the availability of current and valid information. They reflect a basic core that can be repeated with updated information every year and supplemented by a more limited set of indicators based on infrequent or one-time studies.

This year, for elementary and secondary education, new indicators include:

- High school dropout rates;
- Course-taking patterns of high school students;

- The proportion of high school students who work while attending school; and
- Eighth graders' attitudes about school climate.

For postsecondary education, new indicators include:

- College enrollment rate for recent high school graduates;
- Tuition charges as a fraction of income of families with children;
- Proportion of young adults holding jobs, by years of schooling completed; and
- Distribution of college students by parents' education and income.

The concept of education indicators has gained the attention of the U.S. Congress, national organizations, States, and localities. To assist the Center in conceptualizing and developing a set of education indicators most useful to policymakers and researchers, the Congress has mandated that NCES convene a special study panel of experts to "make recommendations concerning the determination of education indicators for study and report" (Public Law 100–297). The Commissioner is to submit the report of the panel to Congress upon completion of its work. The panel held its first meeting in November of 1989, and its deliberations are to be concluded in May of 1991. Its work could result in major changes to the *Condition* after that.

In developing indicators, the Center has participated in a widening national discussion about the types of measures that are useful in monitoring the progress of education. The adoption of a set of National Goals for Education by the President and the Nation's Governors will require development of a series of measures to monitor progress toward those goals. A number of local education agencies and States, such as California and Connecticut, are monitoring their own reform agendas through education indicators. Also, at the national level, the Council of Chief State School Officers seeks to have consistent reporting by the States on a number of indicators that it has identified.

In future editions, the utility of this report should increase as more diverse, high quality data become available, especially as new time series can be constructed. Elementary and secondary education data will be enhanced by revisions in the basic data collected about public schools in the Common Core of Data survey, and by the results from the Schools and Staffing Survey (SASS), which covers both public and private schools.

Data collection from more postsecondary institutions than the traditional accredited 2- and 4-year colleges and universities has already begun. This expanded system, called the Integrated Postsecondary Education Data System, also includes information from nonaccredited institutions whether they are public or private, 4-year, 2-year, or less-than-2-year. Information from this broader group of institutions will provide a much clearer picture of what is happening in the full scope of postsecondary education. Two new data systems begun at the Center are the basis of new indicators in the postsecondary volume. They are the National Postsecondary Student Aid Study (NPSAS) and the National Study of Postsecondary Faculty (NSOPF).

Finally, the format of *The Condition of Education* is designed to present statistical information in an accessible manner for a general audience. As in 1988 and 1989, the essence of each indicator is on two facing pages, including a graphic representation of the major implications of the indicator. An innovation of this edition is the addition of a table with the numerical values for the indicator on the first page. The second page includes one or more charts. In addition, there is a discussion preceding each group of indicators relating them to one another. As in previous years, additional tables supporting each indicator are placed in an appendix.

I hope you find the material helpful and invite you to send us comments on how to make future editions even more useful.

Emerson J. Elliott
Acting Commissioner of
Education Statistics

Acknowledgments

The Condition of Education was prepared in the National Center for Education Statistics (NCES), Office of Educational Research and Improvement (OERI), by the Indicators and Reports Branch of the Data Development Division under the general supervision of Jeanne E. Griffith, Acting Associate Commissioner.

Curtis O. Baker, Acting Chief of the Indicators and Reports Branch, coordinated the development and production of this edition. Mary Frase reviewed the first draft of this volume and made many important suggestions that improved the final result. She also provided valuable technical guidance. Brenda Wade prepared the graphics, including coordination of the styles and establishment of the graphic standards. Larry Suter of the Policy and Review Branch developed indicator 2:8 and provided help with several indicators using Current Population Survey data. Yupin Bae of Pinkerton Computer Consultants, Inc., translated the supplementary tables between computer software formats. Diana Thomas helped prepare data files and typed portions of the manuscript.

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NOTE: These acknowledgments recognize only those who helped develop new indicators for this edition and who helped update indicators repeated from the 1988 and 1989 editions. Mention is not made of those who contributed to the initial development of continuing indicators and who were identified in earlier editions.

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This volume contains 30 indicators. Collectively, they describe the condition of postsecondary education from a variety of perspectives. They were selected to shed light on some important issues in postsecondary education. Unfortunately, not all issues that deserve attention can be covered, usually due to lack of adequate data.

This overview summarizes some major aspects of the entrants to postsecondary education, that is, high school graduates, reviews the structure of this volume, and examines evidence from the indicators about some topics in postsecondary education.

Secondary Students

The condition of postsecondary education cannot be judged in isolation from the condition of elementary and secondary education. After all, the preparation of the students who enter the colleges and universities of our Nation depends in large part on the quality of their elementary and secondary education. While there are some encouraging signs, there are areas where improvement is still necessary.[1] On the bright side:

- High school graduation rates among blacks have risen dramatically over at least the past 27 years. In 1965 only 50 percent of 25- to 29-year-old blacks were high school graduates. In 1987, 83 percent had graduated—only a few percentage points lower than whites.

- After having fallen for many years, college entrance examination scores (SAT) of high school students applying to college began rising in the early 1980s. Thirty-nine percent of high school graduates took the SAT in 1988, up from 33 percent in 1980, and their average total score was 903, up 13 points from 8 years earlier.

- Members of the high school class of 1987 took 2.97 years of mathematics and 2.59 years of science; in each case up .40 years from the high school class of 1982. A similar improvement was shown in foreign languages.

But not all the news is positive:

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[1] The following observations are based on *The Condition of Education, 1990, Volume 1, Elementary and Secondary Education.*

- High school graduation rates among Hispanics 25- to 29-years-old is low—around 60 percent—and did not improve over the decade of the 1980s.

- The overall high school completion rate of 87 percent among 25- to 29-year-olds is too low. Those without a high school diploma face an economy and society that is increasingly complex, technological, and information-driven. With less than a high school education, they will be left at a substantial disadvantage. Among those who completed high school by ages 25 to 29, a substantial fraction did so through alternative routes that may not be a complete substitute for finishing regular high school.

Although finishing high school is not a prerequisite for admission to many colleges, particularly 2-year colleges, only 2.4 percent of undergraduates have not finished high school.[2] Among whites the fraction finishing high school has been stable since 1976. However, among blacks the fraction finishing high school has increased substantially. Therefore, blacks make up a larger portion of the "pool" of candidates for postsecondary education. Given recent improvements in SAT scores, these cohorts appear better prepared for college level studies than those in the recent past.

Structure of The Condition of Postsecondary Education

A quick tour of the volume may help the reader make the best use of it. The 30 indicators are organized into 3 parts and 10 sections. The three parts are (1) student progression and outcomes, (2) context, and (3) resources.

In the first part, the first five sections describe student progression through postsecondary education—the education pipeline. These five sections are designed to approximate the progression of students from first entry into college to entry into the labor market. Section A, Access and Participation, includes measures of the proportion of high school graduates who start college immediately, and the proportion of high school graduates above the traditional college attendance age who are enrolled. It also includes an indicator of access from the perspective of college cost and family income. Section B, Persistence, includes a measure of continuous attendance from one year to the next among college students. Persistent attendance is a prerequisite for progress, and progress is a prerequisite for completion. Section C, Educational Attainment and Curriculum, includes measures of the proportion of high school graduates who complete 4 years of college and a measure of the proportion of those starting college who complete a baccalaureate degree. This section also describes the changing distribution of majors chosen by college graduates. Section D, Continuation to Advanced Levels, is directed to graduate education. It includes a measure of the general learned abilities of students applying to graduate school and a measure of the proportion of recent college graduates enrolling in graduate school. Section E, the final section of the five describing the pipeline of higher education, includes two economic outcomes, employment and earnings, and their relationship to the amount of postsecondary education an individual has invested in.

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[2] U.S. Department of Education, National Center for Education Statistics, *Profile of Undergraduates in American Postsecondary Institutions*, December 1989.

Some indicators inform about progress of the student or adult population, whereas others inform about the educational system as a whole. Almost all of the indicators in sections A through E have clear population reference groups. These include: (1) families with children approaching college age (*Indicator 2:4*), (2) high school graduates of particular ages (*Indicators 2:1, 2:2, 2:3, 2:7*), (3) those enrolled as freshmen (*Indicators 2:5, 2:6, 2:9*), (4) those enrolled at other undergraduate levels (*Indicators 2:5, 2:6*), and (4) college graduates of particular ages (*Indicators 2:12, 2:13, 2:14, and 2:15*). Section F, Output and Productivity of Colleges and Universities, includes five indicators (*Indicators 2:16, 2:17, 2:18, 2:19, 2:20*) based on degrees conferred by colleges and universities for which there is no clear population reference group. In these cases, the reference is the number of degrees awarded in an earlier year. This is also the reference for indicators 2:9, 2:10, and 2:11 which present information on degrees awarded by level, field, and race/ethnicity. Without a clear population reference group these measures provide only indirect evidence of the flow through the pipeline, and are more appropriately viewed as measures of the output of the higher education system.

In the second part on context, the two subsections, G, Size and Growth, and H, Student Characteristics provide measures of the changing character of higher education both in terms of its institutions (2- v. 4-year, public v. private) and its students (full-time/part-time, race/ethnicity, family background, the college student's propensity to hold a job, and so forth). These characteristics only partially describe the changing context for learning and instruction in higher education. The reference group for these indicators is all students enrolled in higher education, and in one case postsecondary education.

And, in the part on Resources, the final two subsections, I, Fiscal Characteristics, and J, Faculty Issues, provide measures related to the resources used in higher education.

Crosscutting Issues

In the remainder of this overview we gather some of the disparate pieces of evidence on particular issues: (1) persistence and completion rates, (2) minorities in higher education, (3) women in higher education, (4) mathematics, science and engineering, and (5) returns to a college education.

Access, persistence, and completion rates

Has the college completion rate changed over the 1970s and 1980s? The answer to this question is complicated by many factors, which have spurred some debate. One way to simplify the discussion is to divide the larger question into component questions.

What proportion of high school graduates start college in the year they graduate? The proportion of men starting college in the October following high school graduation fell during the first half of the seventies. The rate was 60 percent in 1968 and fell to 50 percent by 1975. Recently it has rebounded. In 1987 it was 57 percent; among women it was 56 percent (*Indicator 2:1*).

What proportion of those who start college finish within 5 or 6 years of starting? Among members of the high school class of 1972 who started college in the fall of 1972, either 2-year or 4-year, either full-time or part-time, 33 percent had graduated with a baccalaureate degree within 5.5 years of starting. Among members of the high school class of 1980, the comparable rate was 22 percent.[3]

What proportion of high school graduates finish college? In 1965, 22 percent of men 25-29 years old who had finished high school had also finished 4 or more years of college (*Indicator 2:7*). This increased to a peak of 32 percent in 1976. The rate then declined gradually; it was 26 percent in 1987. In 1965, only 14 percent of women high school graduates 25-29 years old had finished 4 or more years of college. The rate has increased throughout the 1970s and most of the 1980s and by 1987 was 25 percent: the gap between men and women had been eliminated. An alternative approach to measuring the college completion rate of an age group, such as 25- to 29-year-olds, is to measure the college completion rate of a high school graduating class a given number of years after graduation. Among members of the high school graduating class of 1972, 24.7 had completed a baccalaureate degree by the end of 1978, 6.5 years after graduation. Among members of the class of 1980, 20.1 percent had a baccalaureate degree by the end of 1986.[4]

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[3] Knepper, Paula. *Trends in Postsecondary Credit Production*, U.S. Department of Education, National Center for Education Statistics, 1990.

In summary, there was a decline in educational attainment rates among men. Among women it has not declined. Young people are taking longer to finish college, making it more difficult to compare attainment rates over time. To the extent, that "on-time" completion of college is important for bringing the skills and knowledge acquired in college to the economy and society as quickly as possible, then the trend appears to be in a negative direction. But to the extent that the Nation values eventual completion of a college degree, the figures seen can be interpreted more optimistically.

Minorities in higher education.

Blacks have made great strides in education. Much of the increased economic prosperity of blacks relative to whites from 1940 to 1980 has been attributed to the increase in the amount and quality of their education.[5] The gains made by blacks in the 1980s, however, were uneven. Blacks continued to make gains in elementary and secondary education. For example, high school completion rates among blacks continued to increase between 1980 and 1988—the fraction of blacks 16-24 years old not enrolled in high school and who had not finished high school fell from 19 to 15 percent between 1980 and 1988.

Blacks, however, did not make the same gains in postsecondary education. In 1977, 48 percent of blacks graduating from high school enrolled in college (*Indicator 2:1*). That rate fell to 38 percent in 1983 and rebounded to 44 percent by 1987. While the 1975 rate for blacks was only 5 percentage points below the rate for whites, by 1983 this difference had increased to 16 percentage points. In 1987, the difference in this measure of immediate entry to college remained at 14 percentage points. The college enrollment rate of high school graduates 16-24 years old, regardless of the year of graduation, is a broader measure that accounts for delayed enrollment (*Indicator 2:3*). On this measure, which was between 34 and 41 percent for white men in the 1980s, black men were only 2 or 3 percentage points behind white men in the last half of the 1970s, but fell to 8 points behind in the 1980s. For most of the

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[4] Carroll, Dennis. "Trends in Postsecondary Persistence," paper prepared for presentation at the 1990 meetings of the American Educational Research Association, April 1990.

[5] See U.S. Commission on Civil Rights, *The Economic Progress of Black Men in Americans*, Washington, D.C.: U.S. Government Printing Office, 1986 and Smith, James P. and Finis R. Welch, *Closing the Gap: Forty Years of Progress*, Santa Monica, CA: The Rand Corportion, 1986.

1980s, black women had enrollment rates very similar to black men.

Among persons above the traditional college attendance ages, there are no discernable differences in the rates of college attendance between whites and blacks (*Indicator 2:3*). For example, from 1980 through 1986, approximately 8 percent of 25- to 34-year-olds, both black and white, were enrolled in college.

The changes in the fields blacks chose to study are encouraging. In 1977, these choices were dissimilar to fields whites chose with the consequence that blacks were underrepresented in the natural sciences and engineering and overrepresented in the social sciences and education (*Indicator 2:10)* relative to whites. By 1987, the field distributions for blacks and whites were largely similar.

In graduate education, the indicators are mixed (*Indicator 2:11)*. The number of master's and doctor's degrees awarded to blacks in 1987 was down 34 and 15 percent, respectively, from their levels in 1977. However, most of this downturn can be attributed to blacks leaving education as a field. So, the downturn in advanced degrees awarded to blacks may be as much due to changes in the fields blacks chose to study as it is to other factors.

Among Hispanics 25-29, the high school graduation rate in 1988 was 60 percent, far below the rate for blacks or for whites (*Volume I, Indicator 1:3)*. Despite this lower high school graduation rate, measures of Hispanic participation in postsecondary education generally fall between the measures for blacks and whites. For example, on average between 1981 and 1987, 47 percent of Hispanics enrolled in college following high school graduation in contrast to 41 percent of blacks and 57 percent of whites (*Indicator 2:1*). Once enrolled as freshman, an estimated 76 percent re-enroll the following year in contrast to 70 percent of black freshman and 78 percent of white freshman[6] (*Indicator 2:3*). In 1987, of Hispanics 25-29 years old who had finished high school, 15 percent had finished 4 or more years of college, similar to the 14 percent rate among blacks, but far below the 27 percent rate among whites (*Indicator 2:7*). In 1987, the major fields of the baccalaureate degrees awarded to Hispanics were similar to that of whites. Hispanics are somewhat more likely to major in the humanities and social sciences and somewhat less likely to major in education and business than whites (*Indicator 2:10*). The number of graduate degrees awarded to Hispanics has increased. It is not clear, however, that the number has kept pace with the growth in the Hispanic population and in the number of Hispanic college students (*Indicator 2:11*).

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[6] The estimated percentages of 76 and 78 for Hispanics and whites, respectively, are not significantly different from each other.

Women in higher education

Traditionally, women have been more likely to finish high school, but less likely to go on to college. However, by the late 1980s, women had closed much of the gap between themselves and men. For example, since 1975 the rates at which men and women have enrolled in college, either 2-year or 4-year, following high school graduation have been very similar (*Indicator 2:1*). But, during the same period the 4-year college enrollment rate among all high school graduates 16-24 has been somewhat lower for women than for men (*Indicator 2:2*), suggesting that women may be less likely to complete 4 years of college. In fact, that had been the case until recently. In 1975, of high school graduates 25-29 years old, 23 percent of women and 30 percent of men had finished 4 years of college. By 1987, the gap was reduced to 1 percentage point—25 percent of women and 26 percent of men had finished 4 years of college. Differences in higher education attainment between men and women are very small (*Indicator 2:7*).

An area where substantial differences remain is the fields women study.[7] In 1986, only one in five baccalaureate degrees in computer sciences and engineering was awarded to a woman; only slightly more than one in four in the physical sciences was awarded to a woman. On the other hand, women earned three out of four of the baccalaureate degrees awarded in education.

The labor force participation rates of women rose steadily throughout the 1970s and 1980s for those with a high school education or better. By 1987, the percentage of college women employed was about 13 percentage points lower than for men—81 versus 94 percent, in contrast to a 27 point gap in 1975. College women have shared in the growth in earnings of all college graduates in the 1980s. In fact, college women have a greater earnings premium than do men over those with only a high school education. However, college women still earn substantially less than college men.

Mathematics, science, and engineering

There are at least two reasons why we as a Nation are particularly concerned with mathematics, science, and engineering education. First, the U.S. has traditionally been a leader in producing new science and engineering knowledge and in translating this knowledge into new technologies that increase worker productivity and generally improve the quality of life. This leadership position is being challenged with respect to translation of knowledge into new technologies and products, and, the U.S. position as a leader in producing new knowledge may be in jeopardy. Second, with the inevitable increase in the sophistication of the technologies used in the workplace, all workers must necessarily be more technologically literate.

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[7] *The Condition of Education, 1989*, Volume 2, Postsecondary Education, *Indicator 2:6*.

The general rate of participation and completion of higher education in the U.S. is much greater than in the other major industrialized economies of the world. However, in the U.S., the fraction of the population of 24-year-olds in 1987 who had completed a baccalaureate degree in the natural sciences or engineering is one-half the corresponding rate in Japan and only slightly higher than the rate in Germany.

The number of baccalaureate degrees awarded in engineering increased during both the 1970s and 1980s (*Indicator 2:16*). In computer and information sciences, the number awarded more than tripled between 1980 and 1988, an indication of the responsiveness of undergraduates to the demand created by the explosion of computer use in the U.S. during the 1980s (*Indicator 2:17*). The number of graduate degrees awarded in computer science also increased, but not at the same rate as baccalaureate degrees. In contrast, engineering degrees awarded increased by 29, 44, and 67 percent at the Baccalaureate, Master's, and Doctorate levels, respectively (*Indicators 2:17, 2:18, 2:19*). The faster growth at the more advanced levels is an indication of the changing nature of the engineering field. Engineering is becoming more theoretical and the tools are becoming more sophisticated, requiring more engineers with graduate education.

At the same time, the share of engineering doctorates awarded to non-U.S. citizens increased from 33 percent in 1980 to 47 percent in 1988 (*Indicator 2:20*). During this period, non-U.S. citizens earned almost half of the increased number of engineering doctoral degrees awarded. This is an indication that U.S. graduate programs in engineering are among the best in the world, but also that much of the new talent these programs create will not stay in the U.S. (*Supplementary table 2:20-4*).

The natural sciences have not experienced the same growth as engineering and computer sciences. In 1980, about 80,000 baccalaureate degrees were awarded in both the natural sciences, and engineering and the computer sciences (*Indicator 2:17*). In 1988, the number awarded in the natural sciences had declined to 70,000 whereas the number in engineering and computer sciences has increased to 123,000. Within the natural sciences, the number of degrees in both the life and physical sciences decreased, whereas the number of degrees in mathematics increased after having experienced a major decline during the 1970s.

At the graduate level, natural sciences are doing better. An increasing fraction of undergraduates majoring in the life sciences are continuing to graduate school—in 1936 the rate was 41 percent, up from 35 percent in 1980 (*Indicator 2:13*). In mathematics and the physical sciences, the rate is down—many more graduates in these fields are taking full-time jobs, an indication that there are good labor market opportunities for these students which may induce more students to choose these majors. The number of graduate degrees awarded in the physical sciences and mathematics has increased between 1980 and 1988 (*Indicators 2:18, 2:19*), but again this must be qualified by the fact that a large part of the increase is among non-U.S. citizens studying in the United States. For instance, the percentage of doctorates in mathematics awarded to non-U.S. citizens increased from 22 to 44 percent between 1979 and 1987 (*Indicator 2:20*).

The demand in private industry for individuals with advanced degrees in the sciences and engineering is increasing. This has put upward pressure on starting faculty salaries as universities compete for the new talent. New doctorates in these fields are continuing to take jobs at colleges and universities. In some fields, the fraction taking jobs in academia increased, in others it fell. For example, in 1988, 33 percent of new engineering doctorates had a commitment for employment at a college or university, up from 26 percent in 1978. In the life sciences, the rate fell from 58 to 48 percent during the same period. In mathematics, it increased from 71 to 81 percent. However, with the possibility that large numbers of scientists who entered academia in the post-Sputnik years will be retiring in the next 10 to 20 years, there is concern that the need for scientists with doctor's degrees will increase substantially.

Returns to a college education

The early 1970s were characterized by a fall in the earnings of college graduates relative to high school graduates. This led some analysts to suggest Americans were over-educated.[9] However, the 1980s has proved them wrong. The relative earnings of college graduates, both men and women, increased remarkably. In 1975, men college graduates 30-34 years old earned only 16 percent more than those with only a high school education, but in 1987, they earned 57 percent more. For women, the premium was 71 percent in 1975 and 83 percent in 1987. These large earnings premiums for college graduates encourage more young people to enroll in college, pay the sometimes high price of tuition, and complete a baccalaureate degree.

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[9] Freeman, Richard. *The Over-educated American.* Basic Books, 1975.

Conclusion

In the preceding discussion we have covered only some of the issues treated by the 30 indicators in this volume. The reader is encouraged to read the overviews to each subsection for discussion of other issues, to peruse the indicators of interest, and to go to the supplementary tables for additional details.

Indicators of Postsecondary Education

I. Student Progression and Outcomes

Wide access to postsecondary education for individuals from all parts of our society has been a national objective for many years. Actual participation is one indicator of the accessibility of postsecondary education to today's young people. The traditional route to higher education is to enroll in the fall following high school graduation. The proportion of recent high school graduates that are enrolled in college each October measures this phenomenon. However, some young people take time out from school to go to work, to travel, and to provide themselves with time to decide what it is they want to study and to develop the motivation to do so. Thus, a general college enrollment rate among high school graduates in the traditional college attendance ages (under 25) is a more inclusive measure of participation. Postsecondary education provides people with many second chances to change careers or to succeed when they previously had failed to take full advantage of educational opportunities. An indication of this second chance aspect of postsecondary education is the enrollment rate among 25- to 34-year-olds, people above the traditional college attendance ages. Participation is a useful but imperfect indicator of accessibility. For instance, with no change in accessibility but with a decline in the rewards of postsecondary education, participation will fall. Another indicator of accessibility is the money price of a year of college education, which is approximated by the cost of tuition, room, and board. This price provides an indicator of financial hindrances to going to college, which complements the participation indicators.

The proportion of *males* enrolling in college immediately after high school graduation has risen during the 1980s after falling during the first half of the 1970s and remaining stable during the last half of the 1970s. On the other hand, the rate at which *female* high school graduates enroll in college has increased during most of the last two decades. Since the middle of the 1970s there has been little difference in the college-going propensities of men and women. However, when attention is broadened to all high school graduates 16-24 years old (*Indicator 2:2*), the picture changes somewhat. *Indicator 2:2* includes those who delay entry into postsecondary education, and not just freshmen but all levels of undergraduate higher education. With this broader measure of participation, a gender gap remains in the proportion of high school graduates enrolled in college, suggesting that continuation beyond the freshman year is lower for women. All of this gap is in 4-year college enrollment rates; there is no gap in 2-year college enrollment rates. In contrast, among older students (25- to 34-year-olds) male and female college participation rates do not differ. That is, men and women are equally likely to return to school when they are 25 to 34 years old, and there is no difference between them in the type of school (2-year or 4-year) they enroll in.

The contrast between blacks and whites is different. Up through 1977 or 1978, the gap in college-going rates (*Indicator 2:1*) between blacks and whites was declining.

The 1976-78 average for blacks and whites differed by 2 percentage points. However, between 1976 and 1982, the gap widened as white college-going rates increased and black rates decreased. Since 1982 black college-going rates have begun to increase again, but in 1988 the gap between blacks and whites remained sizable. The college-going rates of recent Hispanic high school graduates fluctuates widely, but generally exceeds that of blacks. The broader measure of postsecondary participation (*Indicator 2:3*) tells a similar story. Among students of traditional college attendance ages, the gap between white and black males was almost eliminated in 1976-1978, widened through 1982, and since has remained stable. Unlike the case among whites, black women are as likely to attend college as black men. Among older students, 25-34 years old, there are no discernable race differences. During the 1970s the tendency was for greater participation among 25- to 34-year-old blacks, but this tendency disappeared in the 1980s.

College tuition at both public and private colleges fell throughout the 1970s (in constant 1989 dollars) and was at an all-time low in 1980, when average tuition, room, and board at public colleges was $3,480; at private colleges it was $8,025. Since 1980, the cost of attending college has risen steadily. At public colleges it rose to $4,423 in 1987; at private colleges it rose to $11,501. This represents a growth of 27 and 43 percent (faster than the Consumer Price Index) over the period for public and private colleges, respectively. During the same period, the median income of families with all children 6 to 17 years old (the closest approximation available to families with children approaching college age) grew far less—6.3 percent. The income of families at the 25th percentile of the income distribution grew even more slowly—1 percent. The net result is that without any scholarship, grant, or loan aid, the average annual cost for tuition, room, and board at public colleges increased from 10 to 12 percent of the median income of families with children 6 to 17; and from 17 to 22 percent of the income of families at the 25th percentile of the income distribution. At private colleges, a family with the median income now would pay 22 percent of their annual income for a year of tuition, room, and board; a family at the 25th percentile would pay 57 percent.

A. Access and Participation

Indicator 2:1 Immediate transition from high school to college

Most high school students enroll in college immediately after finishing high school. So the percent of recent high school graduates enrolled in college in the October following graduation is a leading indicator of the total number who will eventually enroll. The percent enrolling is a measure of the accessibility of postsecondary education to high school graduates.

- **In 1987, more than half, 56.5 percent, of high school students enrolled in college in the fall following graduation.**
- **The proportion of men going to college directly from high school declined during the early 1970s, but began to increase in the 1980s, and by the late 1980s was nearly as high as it was in the late 1960s.**
- **The gap between men and women in the proportion going to college directly from high school disappeared by the mid-1970s.**
- **The gap between whites and blacks narrowed to its minimum in the mid-1970s, and since has varied, but in 1987 was 15 percentage points.**

Percent of high school graduates enrolling in college in the October following graduation: 1968–1987 (selected 3-year averages)

		Male			Female			Race/ethnicity		
Year[1]	Total	Total[2]	2-year	4-year	Total[2]	2-year	4-year	White	Black[3]	Hispanic[4]
1968	53.6	60.3	—	—	47.8	—	—	55.0	42.3	—
1971	51.4	55.1	—	—	48.0	—	—	51.9	47.7	—
1974	48.3	50.7	—	—	46.1	—	—	48.8	43.8	—
1977	49.9	50.3	15.3	33.3	49.6	17.0	30.8	49.9	47.9	40.4
1978	50.0	51.3	16.1	33.5	49.0	17.5	29.8	50.1	47.5	—
1979	49.6	49.5	16.0	31.7	49.7	18.7	29.4	49.9	45.0	—
1980	50.9	50.7	17.9	31.5	51.0	19.3	30.0	51.3	43.8	—
1981	51.3	50.2	18.1	30.9	52.3	20.4	30.7	52.2	40.6	—
1982	52.4	51.9	19.1	31.6	52.9	19.4	32.2	53.9	39.2	49.3
1983	52.8	52.2	18.5	31.8	53.3	20.0	32.2	54.9	38.5	46.7
1984	55.1	55.4	19.3	34.0	54.8	19.6	33.8	57.4	40.2	49.4
1985	55.5	56.8	19.8	35.1	54.4	19.2	33.8	57.8	39.6	46.3
1986	56.1	57.6	19.3	37.5	54.6	18.8	34.9	57.3	43.3	42.4
1987	56.5	57.1	19.9	36.9	55.9	19.8	35.6	57.7	44.1	45.0

— Not available

[1] Three-year averages. For example, the 3-year average percentage for 1987 is the average of the percentages for 1986, 1987, and 1988. See supplementary table 2:1-2 for single-year percentages.

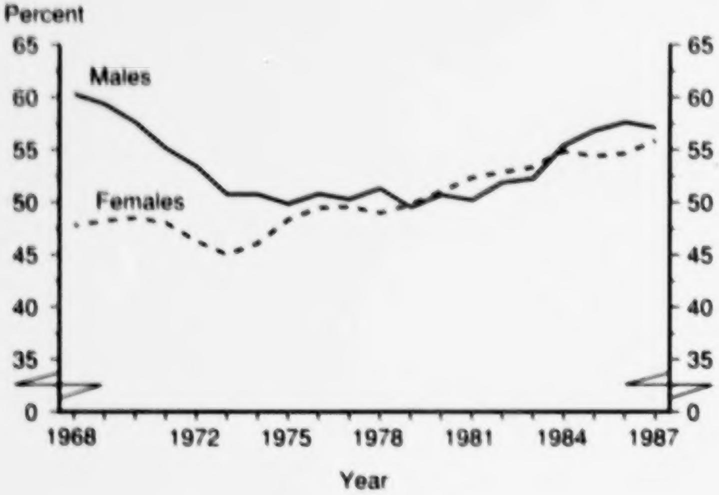
[2] Total equals the sum of those enrolled in 2-year, 4-year, and those not reporting the type of college.

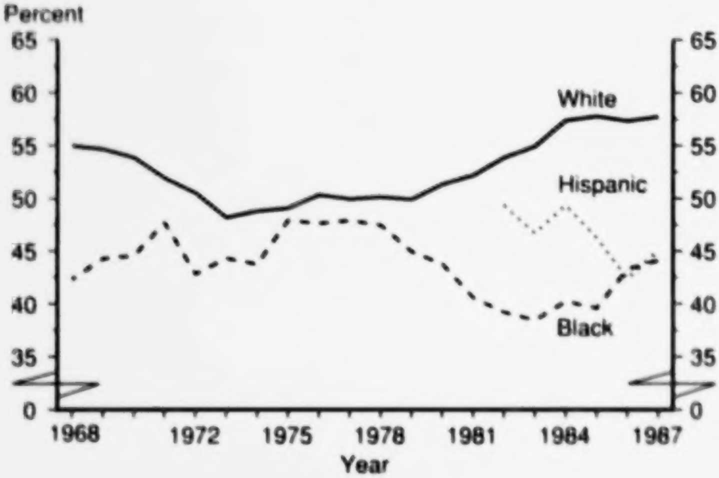
[3] Nonwhite until 1976, black thereafter.

[4] Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . . ," various years and unpublished tabulations of the Bureau of Labor Statistics.

Chart 2:1 Percent of high school graduates enrolling in college in October following graduation: 1968–1987 (3-year averages)





SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years and unpublished tabulations of the Bureau of Labor Statistics.

Indicator 2:2 Participation in undergraduate higher education

The college enrollment rate among high school graduates in a broad age group is an indicator of participation in postsecondary education that captures those who delay enrollment after leaving high school. Those pursuing postgraduate studies are excluded from this measure. Traditionally, college students have been under 25 years old. The participation rate of 25- to 34-year-olds reflects the degree to which individuals change careers or take advantage of educational opportunities they neglected at a younger age.

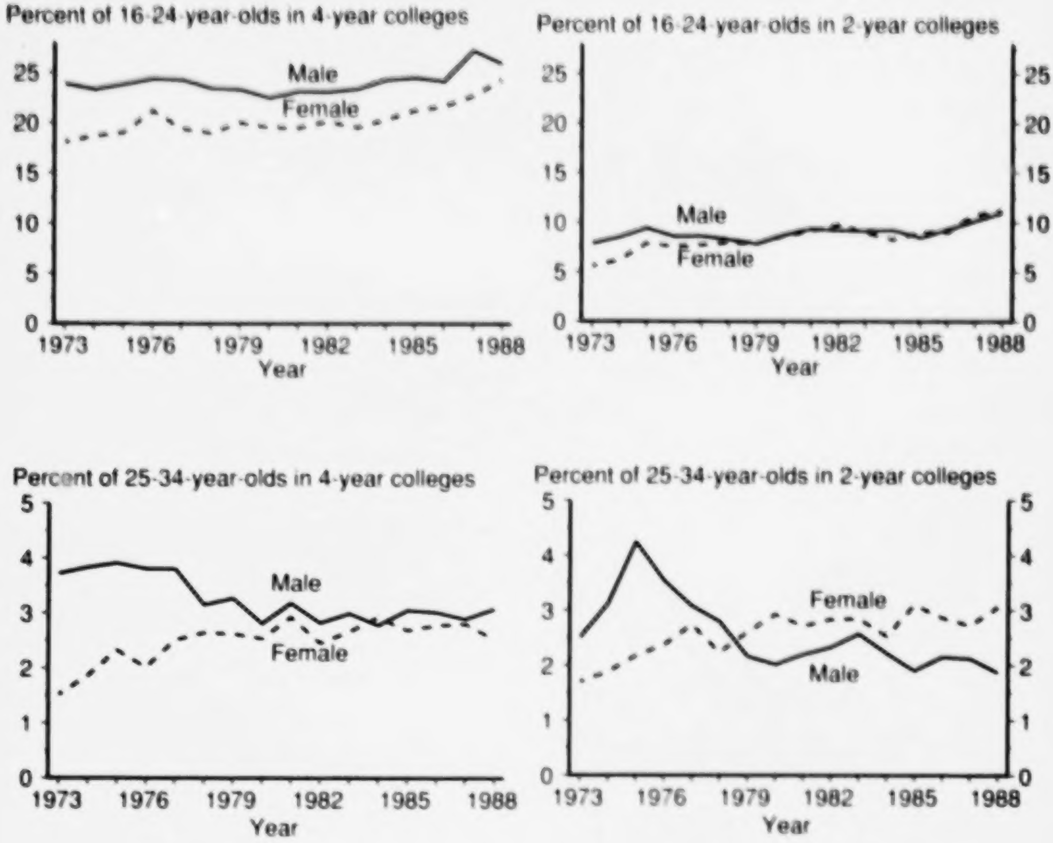
- **The proportion of high school graduates 16-24 years old enrolled in college increased during the 1980s among both men and women.**
- **The proportion of high school graduates 25-34 years old enrolled in college was stable during the 1980s among both men and women.**
- **Among 16- to 24-year-olds, men are more likely to be enrolled in 4-year colleges than women. However, women in this age range are as likely as men to be enrolled in 2-year colleges.**
- **Among 25- to 34-year-olds, women are as likely as men to be enrolled in both 2-year and 4-year colleges.**

Percent of high school graduates 16-24 and 25-34 years old enrolled in 2-year and 4-year colleges: 1973–1988

	Male high school graduates				Female high school graduates			
	16-24 years old		25-34 years old		16-24 years old		25-34 years old	
Year	2-year	4-year	2-year	4-year	2-year	4-year	2-year	4-year
1973	7.9	23.8	2.5	3.7	5.6	18.1	1.7	1.5
1974	8.5	23.3	3.1	3.8	6.2	18.6	1.9	1.9
1975	9.4	23.8	4.2	3.9	7.9	19.0	2.2	2.3
1976	8.6	24.4	3.5	3.8	7.6	21.2	2.4	2.0
1977	8.6	24.2	3.1	3.6	7.7	19.3	2.7	2.5
1978	8.3	23.4	2.8	3.2	7.9	18.9	2.2	2.6
1979	7.8	23.3	2.2	3.3	7.9	20.0	2.6	2.6
1980	8.7	22.4	2.0	2.8	8.6	19.5	2.9	2.5
1981	9.3	23.1	2.2	3.2	9.1	19.4	2.7	2.9
1982	9.2	23.0	2.3	2.8	9.7	20.1	2.8	2.5
1983	9.2	23.3	2.6	3.0	9.0	19.5	2.8	2.7
1984	9.2	24.2	2.2	2.8	8.3	20.3	2.5	2.9
1985	8.5	24.5	1.9	3.1	9.0	21.2	3.1	2.7
1986	9.3	24.1	2.2	3.0	9.0	21.6	2.9	2.8
1987	10.2	27.2	2.1	2.9	10.7	22.7	2.7	2.8
1988	11.0	25.9	1.9	3.1	11.2	24.3	3.1	2.5

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years.

Chart 2:2 **Percent of high school graduates 16-24 and 25-34 years old enrolled in 2-year and 4-year colleges: 1973–1988**


Percent of 16-24-year-olds in 4-year colleges

Percent of 16-24-year-olds in 2-year colleges

Percent of 25-34-year-olds in 4-year colleges

Percent of 25-34-year-olds in 2-year colleges

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years

Indicator 2:3 Race differences in participation in higher education

Race differences in college enrollment rates may reflect differences in access to and persistence in higher education for groups with varying social and economic backgrounds. Differing rates are also a leading indicator of future differences in earnings and productivity that are associated with postsecondary education.

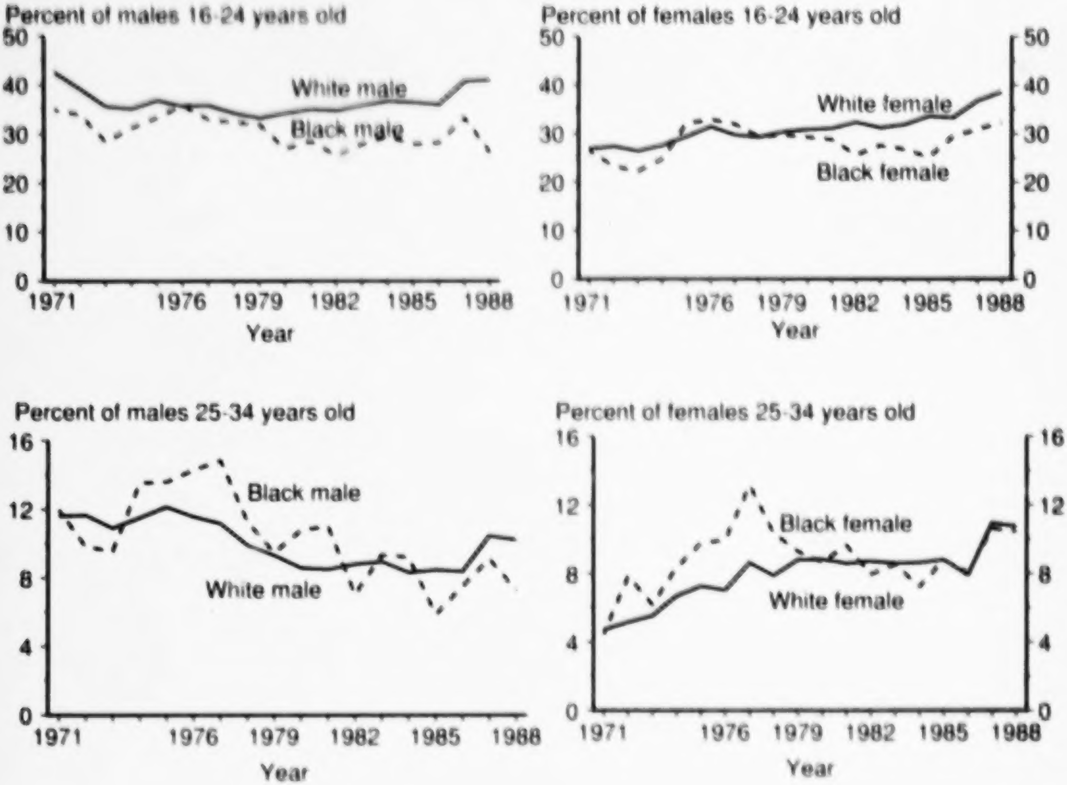
- **Among men 16-24 years old, the enrollment rate of whites increased 5 percentage points between 1986 and 1988; for blacks it showed no trend. The enrollment rate gap, which was less than a few percentage points in 1976–1979, was 15 points in 1988.**
- **Among men 25-34 years old, college enrollment rates declined for whites through the 1970s; however, they increased sharply in 1987 and 1988. For black males there is considerable year-to-year variation, with no clear trend since 1982.**
- **Among women 16-24 years old, there were no race differences between 1975 and 1979. In the 1980s the rate for white women continued to rise, whereas for black women it fell but rebounded between 1985 and 1988.**

Percent of white and black high school graduates 16-24 and 25-34 years old enrolled in college: 1971–1988

	High school graduates 16-24 years old				High school graduates 25-34 years old			
	White		Black		White		Black	
Year	Males	Females	Males	Females	Males	Females	Males	Females
1971	42.6	26.8	34.9	26.4	11.6	4.7	12.0	4.5
1972	39.2	27.3	34.0	23.2	11.7	5.2	9.8	7.8
1973	35.7	26.4	28.4	22.2	10.9	5.5	9.6	6.2
1974	35.2	27.5	31.2	24.7	11.5	6.7	13.5	8.3
1975	36.9	29.4	33.4	32.0	12.1	7.3	13.6	9.8
1976	35.7	31.4	35.9	32.8	11.6	7.0	14.3	10.0
1977	35.8	29.7	33.0	31.9	11.2	8.6	14.8	13.1
1978	34.3	29.2	32.4	29.3	9.9	7.9	11.3	10.3
1979	33.4	30.3	32.0	29.7	9.3	8.8	9.5	9.3
1980	34.3	30.8	27.0	29.2	8.6	8.8	10.8	8.7
1981	35.1	31.1	28.5	28.8	8.5	8.6	11.0	9.6
1982	34.8	32.3	25.6	25.5	8.8	8.7	7.0	8.0
1983	35.9	31.2	27.9	27.6	8.9	8.6	9.3	8.5
1984	36.8	31.8	29.6	26.7	6.3	8.6	9.2	7.2
1985	36.5	33.6	28.0	25.1	8.5	8.8	5.8	8.8
1986	36.1	33.3	28.2	29.3	6.4	7.9	7.5	8.0
1987	40.8	36.7	33.3	30.9	10.4	10.9	9.1	10.6
1988	41.1	38.6	26.2	32.3	10.2	10.7	7.3	10.5

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollments . . .," various years.

Chart 2:3 **Percent of high school graduates 16-24 and 25-34 years old enrolled in college, by race: 1971–1988**



Percent of males 16-24 years old

Percent of females 16-24 years old

Percent of males 25-34 years old

Percent of females 25-34 years old

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollments . . . ," various years.

A. Access and Participation

Indicator 2:4 College costs and family income

The ability of a family to afford college for its children depends on tuition levels, availability of financial aid, family income, and family size. Tuition, room, and board are a measure of the gross price of college. The net price would deduct financial aid amounts. The average cost for tuition, room, and board as a percent of family income is an indicator of the financial accessibility of a college education.

- **College tuition levels fell during the 1970s, reaching a low point in 1980 (in constant 1989 dollars). Since then college costs have risen rapidly.**
- **Tuition at private colleges has grown more rapidly than at public colleges—43 percent versus 27 percent between 1980 and 1987. Median family income has not kept pace; it grew only 3.1 percent over the same interval. The income of families at the 25th percentile did not grow at all over the period, while income of families at the 75th percentile grew 7.5 percent.**

(Constant 1989 dollars)

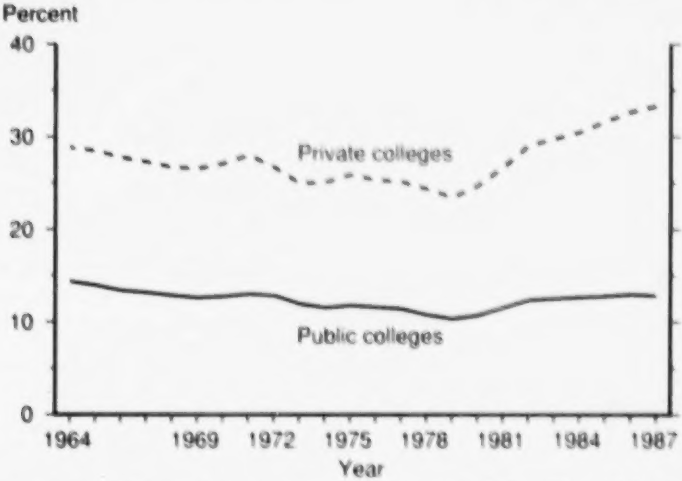
Year	Tuition, room, and board		Percentiles of family income distribution among families with children 6-17 years old*			
	Public	Private	20th	25th	Median	75th
1975	$3,819	$8,397	$19,865	$23,290	$37,358	$52,630
1976	3,875	8,463	20,433	23,797	38,829	54,277
1977	3,832	8,440	20,124	23,582	39,012	54,888
1978	3,701	8,378	20,362	23,798	39,383	54,495
1979	3,545	8,044	20,056	23,437	38,893	55,828
1980	3,480	8,025	18,126	21,379	36,391	53,119
1981	3,604	8,354	17,026	20,319	35,368	51,595
1982	3,813	8,963	16,100	19,575	34,550	51,243
1983	3,942	9,379	15,949	19,365	34,385	52,334
1984	4,096	9,859	16,550	20,011	35,025	53,354
1985	4,187	10,360	17,278	20,530	36,334	54,218
1986	4,429	11,157	16,892	20,425	36,645	55,840
1987	4,423	11,501	17,074	20,523	37,524	57,102

* These families may have children 18 or over, however, all the younger children are between 6 and 17 years old.

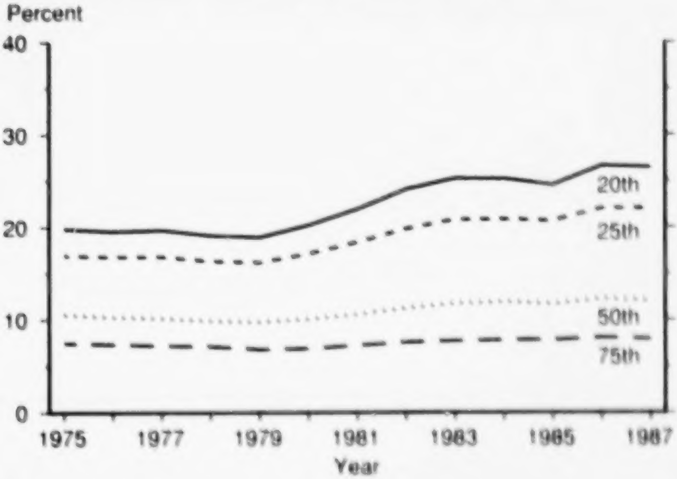
SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1989*. U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . ." various years.

Chart 2:4 Tuition, room, and board as a percent of family income

Tuition, room, and board as a percent of median income of all families, by control of institution: 1964–1987



Public **tuition, room, and board as a percent of income of families with children under 18, all 6 to 17 years old, at selected income percentiles: 1975–1987**



SOURCE: National Center for Education Statistics, *Digest of Education Statistics*, 1989 and U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons . . . ," various years.

B. Persistence

Not all students who enter postsecondary institutions intend to complete the requirements for a 4-year baccalaureate degree. Many enter 2-year and less-than-2-year institutions with the intention of completing programs of shorter duration. Others start their postsecondary education with the intention of earning a degree, but for a variety of reasons are not able to or must delay doing so.

Research has shown that persistent attendance is strongly associated with the likelihood of finishing.[1] A break in continuous attendance, that is, dropping out or stopping out, is most likely to occur during the first 2 years in college. Through the first half of the 1980s, the proportion of freshmen still enrolled 1 year later[2] was about .78. Among sophomores, the proportion enrolled again 1 year later is somewhat lower still, reflecting the end of 2-year programs. Then it rises to .85 in the junior year. Ninety four percent of starting seniors graduate within the year. There has been no significant trend in these rates since the early 1970s. However, these rates are lower for Hispanics and lower still for blacks. The differences between whites on the one hand and Hispanics and blacks on the other widened between 1976 and 1980. Since then the difference between whites and Hispanics has narrowed, whereas it has remained the same between whites and blacks.

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[1] Carroll, C. Dennis. "College Persistence and Degree Attainment for 1980 High School Graduates: Hazards for Transfers, Stopouts, and Part-Timers." National Center for Education Statistics, U.S. Department of Education, January 1989.

[2] This continuation rate is similar in definition to the *event dropout rate*. See supplemental note 2:5 for a discussion of its definition.

B. Persistence

Indicator 2:5 Persistence rates, by sex

Persistent attendance and full-time attendance are strongly associated with completion of a 4-year degree. Those who attend part-time or stop out, that is have periods of non-attendance, are less likely to complete a degree. A measure of persistent attendance is the proportion of students enrolled in two consecutive Octobers.

- **Continuous attendance from year to year is less likely during the first two years of college than during the last two.**
- **Students are most likely to leave college after the second year.**
- **There has been a 4.9 percentage point rise in the continuous attendance rate of freshman between 1979 and 1986. Other rates show little change.**

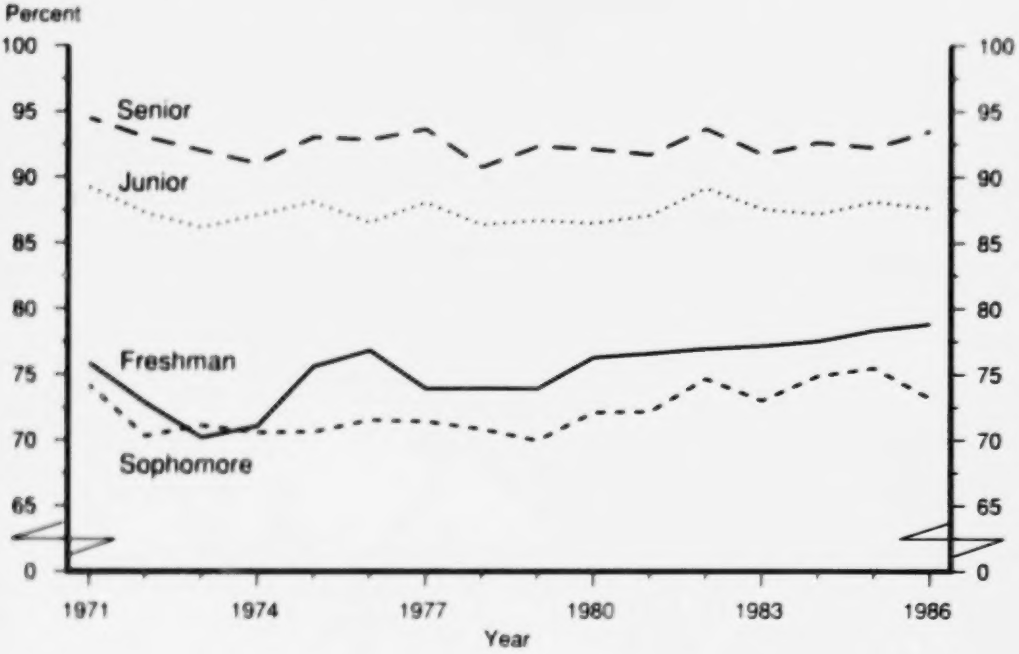
Percent of college students 16-24 years old enrolled in the previous October and again the following October, by previous October's level: 1971–1986 (selected years)

Year	Freshman	Sophomore	Junior	Senior
1971	75.8	74.2	89.2	94.5
1973	70.2	71.1	86.2	92.0
1975	75.6	70.6	88.1	93.0
1977	73.9	71.4	88.1	93.6
1979	73.9	70.0	86.7	92.3
1981	76.6	72.2	87.1	91.7
1983	77.2	73.0	87.6	91.7
1985	78.4	75.5	88.1	92.2
1986	78.8	73.2	87.6	93.5

NOTE: Previous October's level is inferred from the following October's level and the proportion of college students in October 1988 who had completed the highest grade level attended. College students in 4-year colleges and those in 2-year colleges are included in the calculations. See supplemental note for further discussion.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . . ," various years and unpublished tabulations.

Chart 2:5 Percent of college students 16-24 years old enrolled in the previous October and enrolled again the following October, by previous October's level: 1971–1986



SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years and unpublished tabulations.

B. Persistence

Indicator 2:6 Persistence rates, by race/ethnicity

Persistent attendance and full-time attendance are strongly associated with completion of a 4-year degree. Those who attend part-time or stop out, that is have periods of nonattendance, are less likely to complete a degree. A measure of persistent attendance is the proportion of students enrolled in two consecutive Octobers.

- **Black and Hispanic college students are less likely to be enrolled for two consecutive Octobers than white college students.**
- **For whites, continuous attendance rates increased gradually between 1977 and 1986. For Hispanics, the rate has increased since 1979. For blacks they have declined or remained unchanged since 1975.**
- **An overall increase in freshman continuous attendance rates (Indicator 2:5) appears only among whites. Persistence for black and Hispanic freshman has not increased during this period.**

Percent of college students enrolled the previous October enrolled again the following October, by previous October's level and race/ethnicity: 1975–1986 (6-year averages)

Race/ethnicity and years	Freshman	Sophomore	Junior	Senior
White				
1975-1980	75.1	71.5	87.4	92.8
1981-1986	78.2	74.6	88.2	93.2
Black				
1975-1980	72.9	66.7	83.9	88.3
1981-1986	70.4	65.8	82.3	85.1
Hispanic*				
1975-1980	74.9	66.6	79.3	82.2
1981-1986	75.7	68.7	82.6	91.1

* Hispanics may be of any race.

NOTE: See note to text table for the previous indicator.

Percent of college students enrolled previous October enrolled again the following October (average across all levels), by race/ethnicity: 1972–1986 (selected years)

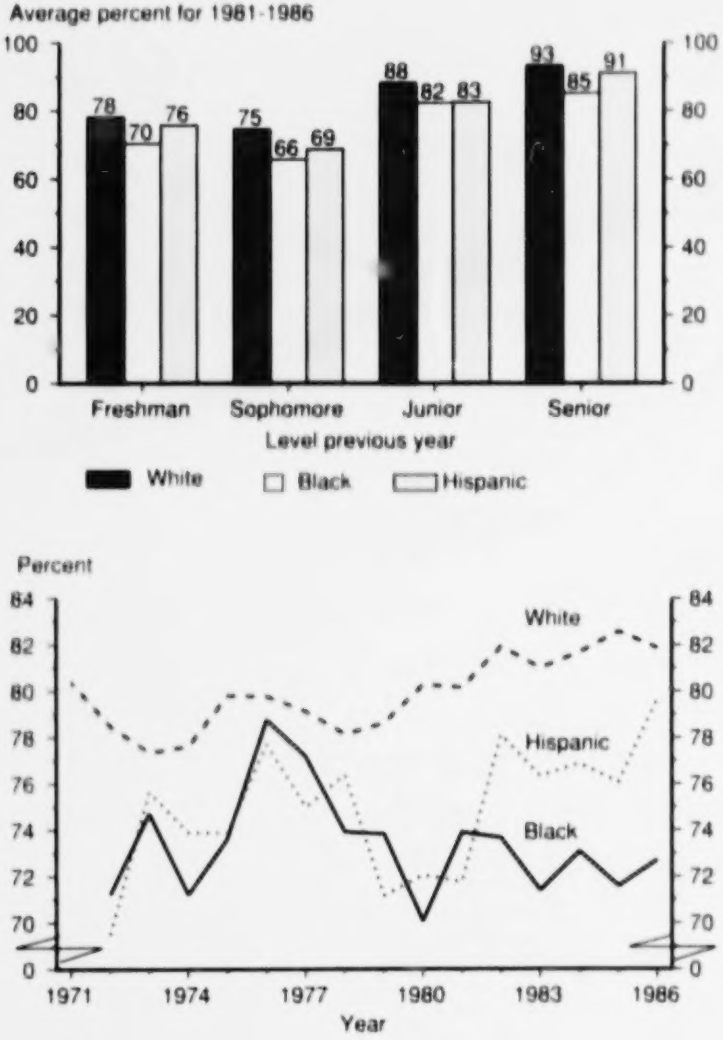
Year	1972	1974	1976	1978	1980	1982	1984	1986
White	78.5	77.6	79.8	78.1	80.3	81.9	81.7	81.9
Black	71.2	71.2	78.8	73.9	70.1	73.7	73.1	72.7
Hispanic*	69.5	73.9	77.7	76.4	72.0	78.1	76.9	79.7

* Hispanics may be of any race.

NOTE: See note to text table for the previous indicator.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years and unpublished tabulations.

Chart 2:6 Percent of college students 16-24 years old enrolled in the previous October and enrolled again the following October, by race/ethnicity



SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . . ," various years and unpublished tabulations.

Indicators presented earlier provided measures of immediate transition to college after high school, overall rates of participation, and rates of continuous attendance. Those indicators provided measures of entry into the higher education pipeline and movement through it. In this section, two measures of completion of a 4-year degree, the result of sustained participation and a major milestone, are presented. The first is the college completion rate for high school graduates as a whole, whether or not they ever attended college. This measure depends on two factors: (1) the proportion who start college and (2) the proportion of those who start who complete college. The second is the completion rate for those who enrolled as freshmen. This measure depends only on the second factor mentioned above.

The educational attainment rate of 25- to 29-year-olds is not a leading indicator, for it reflects the result of participation in traditional postsecondary education. Participation in education after these ages is far less than it is at earlier ages.

The proportion of male high school graduates 25-29 years old who have finished 4 years of college has declined over the past decade, whereas the same rate for women has risen. Traditionally, women have been more likely than men to finish high school but less likely to finish college, but the college attainment rates for men and women have recently converged. For men, the rate peaked in 1976 at 32 percent and by 1987 had declined to 26 percent. The rate for women was 24 percent in 1976 and 25 percent in 1987.

The ratio of baccalaureate degrees awarded to the number of first-time full-time freshmen 5 years earlier* is somewhat lower than it was 15 years ago. This ratio was above .60 between 1973 and 1975. Since then it has been consistently below .60. It reached a low of .53 in 1981 and in 1988 was .59.

The proportion of black male high school graduates 25-29 years old who have finished college was not very different in 1987 than it was in 1965—14 percent. However, during the interim the high school completion rates of blacks rose markedly—from 50.3 percent in 1965 to 84.8 percent in 1987 (see indicator 1:3 in Volume 1). So the proportion of all black men 25-29 with 4 or more years of college has shown marked improvement. The same is true for black women.

An alternative measure of the progress of blacks in higher education is based on the number of degrees awarded to blacks of all ages in a given year. The number of baccalaureate degrees awarded to blacks in 1987 was 10 percent lower for black men and 2 percent higher for black women than it was in 1977, whereas the population of both groups in the relevant age range grew.

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* This is a quasi-cohort graduation rate analogous to the high school graduation rate reported in the "State Education Performance Chart." See supplementary note 2:9 for further discussion.

The major fields of the undergraduate degrees earned by blacks are changing relative to those of whites. In 1977, blacks were 42 percent more likely than whites to major in education. They were 49 percent less likely to major in engineering or computer science, and 35 percent less likely to major in the natural sciences. By 1987 this pattern changed dramatically. In that year blacks were 19 percent *less* likely to major in education, and were only 8 and 13 percent less likely to major in engineering/computer science and natural sciences, respectively. In 1987 blacks were more likely than whites to major in business and technical/professional fields and in the social and behavior sciences. The likelihood of Hispanics completing undergraduate degrees in engineering or natural sciences also rose. In engineering and computer science it rose from 10 percent less likely to 9 percent more likely than whites between 1977 and 1987. In the natural sciences it rose from 18 percent less likely to only 2 percent less likely. Minority students are now studying engineering and science at the undergraduate level at considerably higher levels than in the recent past.

C. Educational Attainment and Curriculum

Indicator 2:7 Educational attainment at ages 25 to 29

Completing 4 years of college is an important educational accomplishment that will yield many benefits to those who achieve it. It represents the end-result of both starting college and persistent enrollment. Some students stop out, others drop out, but the vast majority of those who will ever complete 4 years of college do so by their late twenties.

- **After increases between 1965 and 1976 in the proportion of 25-29 year old male high school graduates who completed 4 years of college, that proportion began to fall. Since 1981, there has been very little change.**
- **Between 1965 and 1976 the proportion of female high school graduates finishing college was at least 6 percentage points below the proportion for men. However, by 1987 the gap had disappeared.**
- **In 1987 the college completion rates of blacks and Hispanics were 12 to 13 percentage points lower than the rate for whites.**

Percentage of high school graduates 25-29 years old who have completed 4 years of college or more, by race/ethnicity and sex: 1965–1987

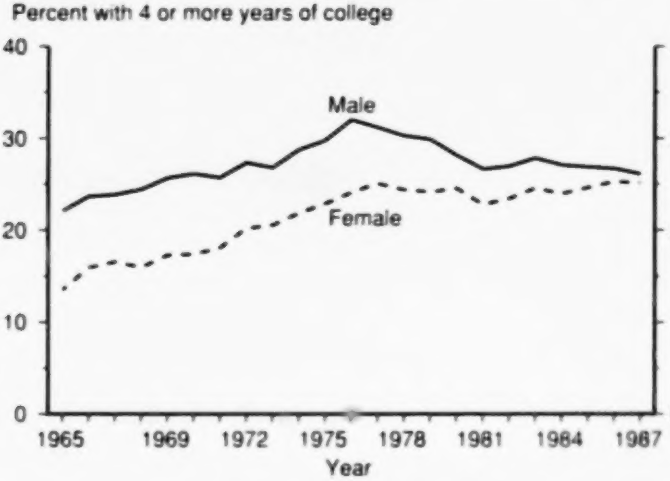
Year	All races			White			Black			Hispanic*		
	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female
1965	17.7	22.1	13.5	17.9	22.5	13.4	13.9	14.4	13.4	—	—	—
1966	19.7	23.7	15.9	20.0	24.4	15.8	12.4	11.0	13.6	—	—	—
1967	20.1	23.9	16.6	20.6	24.6	16.9	10.0	8.1	11.5	—	—	—
1968	20.1	24.4	15.9	20.8	25.3	16.4	9.6	9.1	10.0	—	—	—
1969	21.5	25.7	17.3	22.0	26.7	17.5	12.0	13.6	10.5	—	—	—
1970	21.7	26.1	17.4	22.2	26.9	17.4	13.1	12.3	13.8	—	—	—
1971	21.9	25.7	18.1	22.5	26.4	18.6	11.1	11.7	10.7	—	—	—
1972	23.7	27.3	20.2	24.4	28.1	20.7	13.0	11.4	14.2	—	—	—
1973	23.6	26.8	20.5	24.2	27.7	20.8	12.6	11.2	13.6	—	—	—
1974	25.3	28.7	21.8	26.4	30.1	22.7	11.6	12.4	10.9	11.2	13.1	9.3
1975	26.3	29.8	22.9	27.0	30.6	23.3	15.0	15.8	14.4	16.8	19.6	14.0
1976	28.0	32.0	24.1	28.7	32.9	24.3	17.6	16.5	18.4	12.7	17.9	8.2
1977	28.1	31.2	25.1	29.1	32.5	25.7	16.9	16.5	17.3	11.6	11.7	11.6
1978	27.3	30.2	24.4	28.4	31.8	24.9	15.2	13.7	16.5	17.1	16.4	17.8
1979	27.0	29.9	24.2	27.8	30.8	24.9	16.6	18.1	15.5	12.7	14.2	11.5
1980	26.3	28.1	24.5	27.3	29.4	25.3	15.1	13.9	16.0	13.2	14.7	11.8
1981	24.7	26.6	22.8	25.6	27.7	23.4	14.9	15.4	14.5	12.5	14.4	10.9
1982	25.2	27.0	23.4	26.1	28.2	24.0	15.5	14.6	16.2	15.9	17.6	14.4
1983	26.2	27.8	24.6	26.9	28.8	25.1	16.3	16.5	16.1	17.9	16.8	19.0
1984	25.5	27.1	24.0	26.6	28.0	25.1	14.7	17.0	12.9	16.5	16.8	16.3
1985	25.7	26.9	24.6	26.7	28.0	25.4	14.3	12.8	15.6	18.1	18.6	17.8
1986	26.0	26.7	25.3	27.2	28.2	26.2	14.2	11.7	16.4	15.3	15.4	15.2
1987	25.6	26.1	25.2	26.7	27.2	26.2	13.6	13.7	13.6	14.7	15.7	13.7

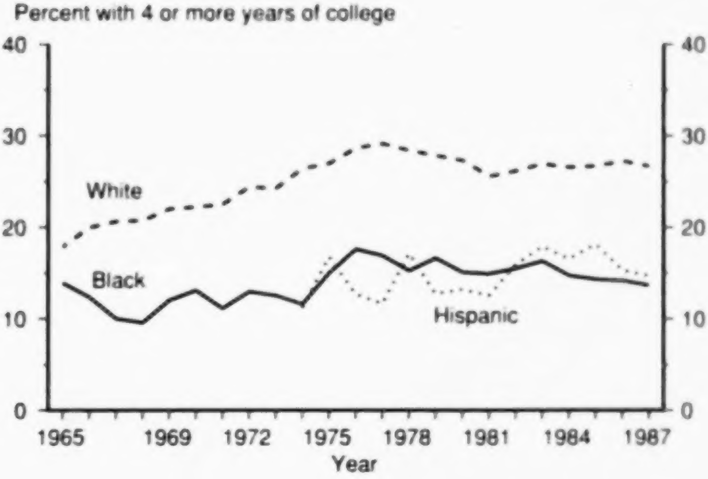
— Not available.

* Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "Educational Attainment in the United States . . .," various years.

Chart 2:7 **Percent of high school graduates 25-29 years old completing 4 or more years of college: 1965–1987**





SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "Educational Attainment in the United States . . .," various years.

Indicator 2:8 International comparisons of higher education attainment

The percentage of the age group completing undergraduate degrees in other highly industrialized countries provides a means of evaluating the accessibility of and participation in higher education in the United States. Furthermore, comparing the percent completing degrees in scientific and engineering fields with other advanced countries measures the levels of knowledge of the U.S. population in technical fields. Maintaining a highly skilled labor force is important for maintaining the United States as a world leader in technical fields.

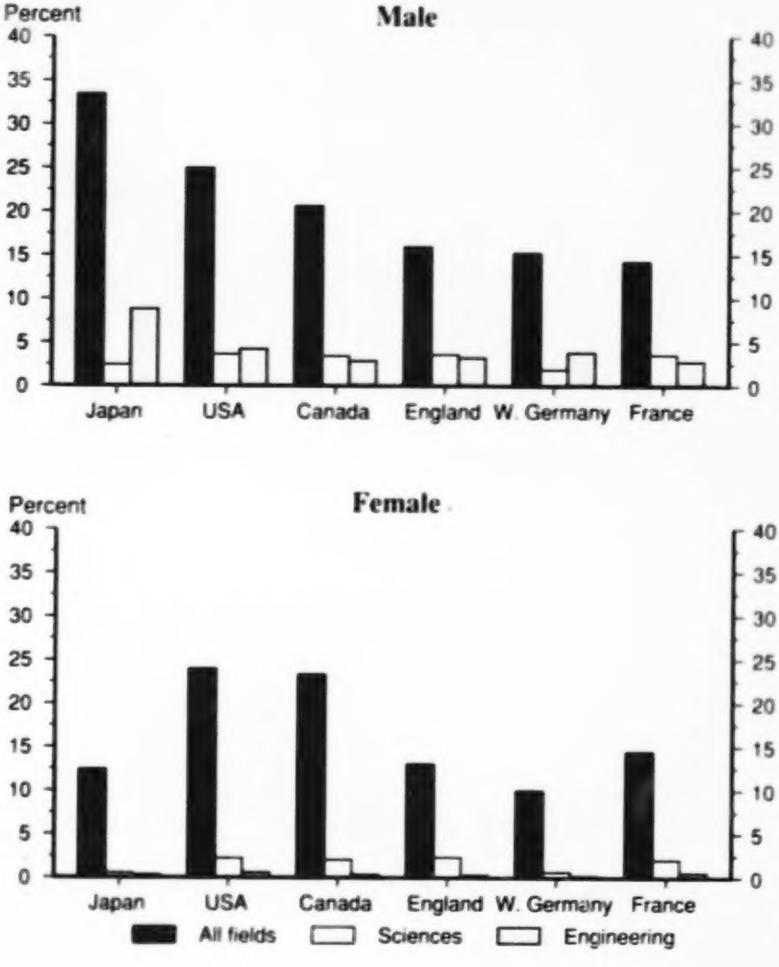
- **A higher percentage of males completed higher education in Japan than did males in the U.S., while more females completed higher education in the U.S. than did females in other countries.**
- **The percentage of the population receiving higher education degrees in science fields was about the same in the U.S. as in Canada, England, and France.**
- **The percentage of males graduating in engineering in the U.S. was about one-half that of Japan and only slightly higher than in Germany.**
- **The percentage of women graduating in science and engineering fields was much lower than for that of men in all countries. Less than 1 percent of women in any country completed degrees in engineering. The percentage of women with degrees in the sciences was about the same in the U.S. as in Canada, England, and France.**

Higher education graduates as a percent of all persons 24 years old, by field of study, sex, and country: 1987

Sex and country	Year	All fields	Sciences	Engineering
Males				
Japan	1988	33.4	2.5	8.8
USA	1986	25.0	3.7	4.3
Canada	1987	20.6	3.5	2.9
England	1986	16.0	3.6	3.3
W. Germany	1985	15.3	1.9	3.9
France	1987	14.3	3.6	2.8
Females				
Japan	1988	12.4	0.6	0.3
USA	1986	24.0	2.2	0.6
Canada	1987	23.3	2.1	0.4
England	1986	13.0	2.4	0.3
W. Germany	1985	10.0	0.7	0.2
France	1987	14.5	2.1	0.6

SOURCE: Data collected for the Organization for Economic Cooperation and Development Indicators Project on Higher Education.

Chart 2:8 **Higher education graduates as a percent of all persons 24 years old, by country: 1987**



Source: Data collected for OECD Indicators Project on Higher Education.

Indicator 2:9 Ratio of bachelor's degrees to full-time, first-time freshmen

The ratio of bachelor's degrees conferred to the number of full-time, first-time freshmen enrolled in higher education in an earlier year provides indications of the extent to which freshmen entering college full-time complete a formal degree within a specified period of time. Changes in the ratio over time suggest changes in persistence toward a degree.

- **The ratio of bachelor's degrees to full-time, first-time freshmen 5 years earlier was 15 percent lower in 1988 than it had been in 1973.**
- **Much of the decline in the ratio of degrees to freshmen occurred between 1973 and the early 1980s. The ratio remained relatively stable during most of the 1980s.**

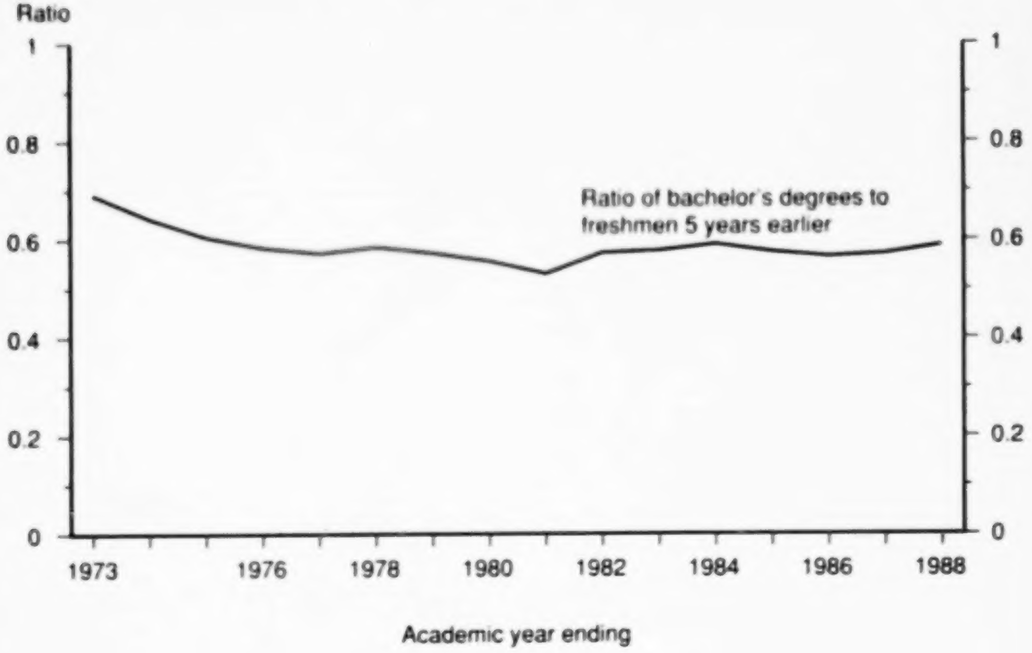
Ratio of bachelor's degrees to full-time, first-time freshmen 5 years earlier

Academic year ending	Ratio
1973	0.691
1974	0.643
1975	0.605
1976	0.583
1977	0.573
1978	0.585
1979	0.573
1980	0.556
1981	0.530
1982	0.573
1983	0.577
1984	0.590
1985	0.574
1986	0.565
1987	0.570
1988*	0.588

*Preliminary.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred and fall enrollment.

Chart 2:9 **Ratio of bachelor's degrees to full-time first-time freshmen: Academic years ending 1973–1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred and fall enrollment.

Indicator 2:10 Baccalaureate field of study, by race/ethnicity

The fields pursued by college students affect the career opportunities open to them. The minority concentration ratio* shows how much the fields studied by minority students differ from those of white students. If the ratio is above 1, minority students are overrepresented in a field. If it is below 1, they are underrepresented. Changes in the size of the ratio over time show whether minority/majority differences in field of study are narrowing or widening. They thus point to possible future changes in the job opportunities open to workers from different racial/ethnic groups.

- **The field of study distributions of both blacks and Hispanics became increasingly similar to the distribution of whites during the 1977-87 decade.**
- **The black concentration ratio declined in education and the social and behavioral sciences between 1977 and 1987. It increased in the computer sciences and engineering, the natural sciences, and business and other technical/professional fields. Similar trends occurred in the Hispanic concentration ratios.**
- **The decline in the black concentration ratio in education has been substantial. In 1977, black bachelor's degree recipients were overrepresented (1.42) in the field, but by 1987, they were underrepresented (.81).**

Minority concentration ratio at the bachelor's degree level, by field of study: 1977, 1981, 1987

Field of study	1977	1981	1987	1977	1981	1987
	Black concentration ratio			Hispanic concentration ratio		
Humanities	0.69	0.74	0.83	1.17	1.11	1.10
Social and behavioral sciences	1.32	1.27	1.06	1.29	1.29	1.13
Natural sciences	0.65	0.74	0.87	0.82	0.94	0.98
Computer sciences and engineering	0.51	0.59	0.92	0.90	0.87	1.09
Education	1.42	1.35	0.81	1.05	1.12	0.89
Business and other technical/professional	0.98	1.04	1.12	0.82	0.86	0.93

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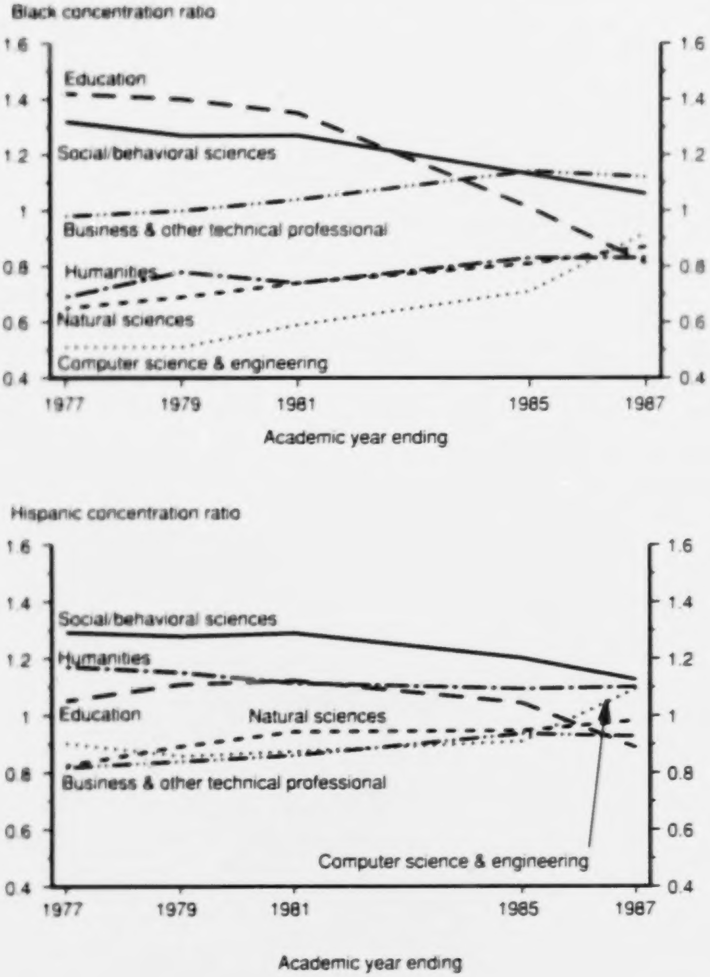
*The minority concentration ratio is calculated as: the percent of a minority group earning degrees who majored in a selected field divided by the percent of whites earning degrees who majored in the same field. Example: Among blacks and whites earning bachelor's degrees in 1987, the percentages majoring in education were 7.5 and 9.3, respectively. Thus, the 1987 black to white field ratio for education = 7.5/9.3 = .81. As measured here, the blacks and whites are non-Hispanic.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Chart 2:10 Minority concentration ratio at the bachelor's level, by field: Selected academic years ending 1977–1987



NOTE: Data for 1983 are not available. Blacks are non-Hispanic.

SOURCE: U.S. Department of Education, National Center for Education Statistics and Office of Civil Rights, surveys of degrees conferred, various years.

C. Educational Attainment and Curriculum

Indicator 2:11 Degrees conferred, by race/ethnicity

The ability of our colleges and universities to attract and retain minority students is important to the Nation's success in achieving its goal of equal opportunity. Changes in the number of degrees earned by minorities in relation to their population and to whites provide one measure of higher education's progress toward this goal.

- **Between 1977 and 1987, growth in the population aged 20-34 outpaced growth in bachelor's and advanced degrees among both whites and blacks. The discrepancy between population and degree growth was much higher among blacks than among whites.**
- **The black population aged 20-34 grew more rapidly during the 1977-87 decade than the white population of the same age (31 vs. 13 percent). However, the number of bachelor's degrees earned by blacks was 3 percent lower in 1987 than it had been in 1977, whereas the number earned by whites was 5 percent higher.**
- **Although the number of advanced degrees earned by both blacks and whites was lower in 1987 than 10 years earlier, the decline was much sharper among blacks than among whites (26 vs. 10 percent).**
- **Among both whites and blacks, men earned fewer bachelor's degrees in 1987 than they had in 1977, whereas women, especially white women, earned more.**
- **At the advanced degree level, only white women earned more degrees in 1987 than they had a decade earlier. The declines in the number of advanced degrees earned by the other three race-sex groups were substantial (over 20 percent).**

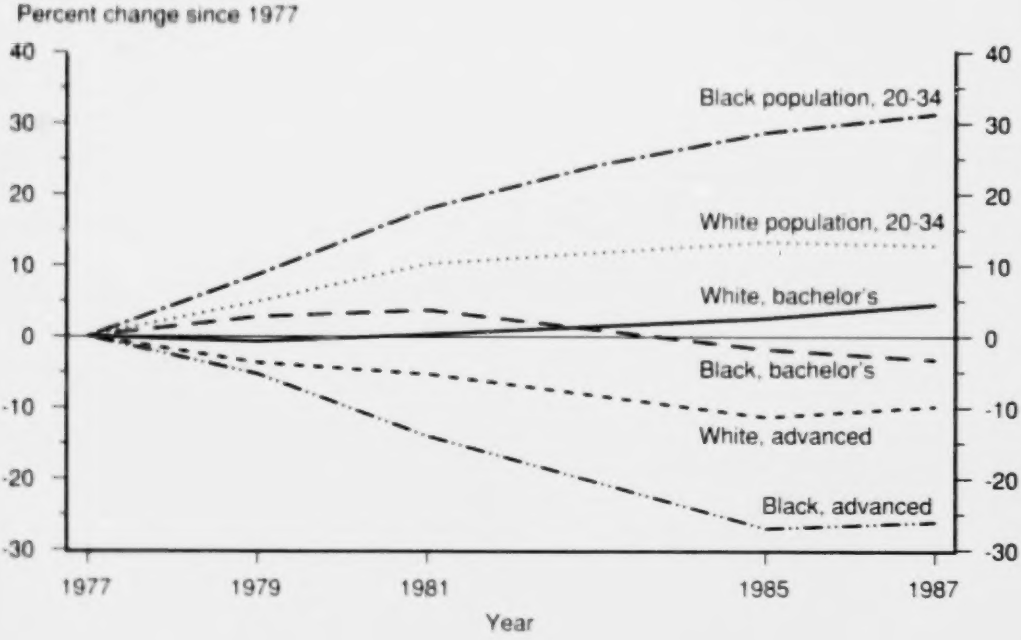
Percent change since 1977 in population aged 20-34 and in number of bachelor's and advanced degrees earned, by race and sex: Selected years 1981–1987

Degrees, sex, and population	White			Black		
	1981	1985	1987	1981	1985	1987
Bachelor's degrees:						
Total	0	3	5	4	-2	-3
Men	-7	-7	-7	-2	-8	-10
Women	9	14	18	8	3	2
Advanced degrees:						
Total	-5	-11	-10	-14	-27	-26
Men	-12	-21	-22	-16	-28	-27
Women	5	2	7	-12	-26	-25
Population aged 20-34	10	13	13	18	29	31

NOTE: Degree data are based on whites and blacks of non-Hispanic origin, whereas population estimates are for all whites and blacks.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred. U.S. Department of Commerce, Bureau of the Census, population estimates.

Chart 2:11 Percent change since 1977 in population aged 20-34 and in number of bachelor's and advanced degrees earned, by race: Selected years 1979–1987



NOTE: Degree data are based on whites and blacks of non-Hispanic origin whereas population estimates are for all whites and blacks.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred. U.S. Department of Commerce, Bureau of the Census, population estimates.

D. Continuation to Advanced Levels

The final stage of formal education is graduate school. That is the place where our young people become humanists, scientists, physicians, and lawyers. In addition to the direct contribution these professionals make to the U.S. economy and society, they serve as the role models for future generations of school children. In addition, the renewal of the faculty of colleges and universities comes from the Nation's graduate schools.

Just as the SAT and ACT exams provide measures of the general learned abilities of prospective undergraduates, the Graduate Record Examinations (GRE) provide measures of the general learned abilities of prospective graduate students. The number of GRE test-takers as a fraction of baccalaureate degrees awarded declined between 1971 and 1982, but since has been rising. The average total GRE test score reached its low in 1979 and had risen 47 points by 1988. The quantitative scores fell less and began rising earlier than the verbal scores. These are indications that the quality of graduate students has been increasing during most of the 1980s.

Not all students who eventually earn graduate degrees continue their studies immediately after getting a baccalaureate degree.* However, the proportion who do is a leading indicator of the number who will. Among college graduates in 1986, 11 percent of those not working full time were enrolled in graduate school about 1 year later. This is down slightly from the 13 percent of college graduates in 1980 and 1984 who went on to graduate school. However, the proportion going on to graduate school varies widely by undergraduate major. Among those with technical or professional undergraduate degrees, only 6 percent went on to graduate school. Among those with arts and sciences undergraduate degrees, 21 percent went on to graduate school.

The number of PhDs awarded did not change appreciably during the 1977-1987 decade (supplementary tables 2:11-2, 2:11-3, and 2:16-1). However, by the end of the decade, white women, Hispanics, and Asians earned larger shares of these degrees. The number of first-professional degrees awarded grew faster than the number of doctoral degrees, and the increase was more broadly shared among demographic groups. The total number of master's degrees awarded fell. The decline was concentrated among whites and blacks. The number awarded to Hispanics and Asians rose. In general, during the 1977–1987 decade, the number of advanced degrees conferred did not keep pace with the number of baccalaureate degrees awarded or increases in the population.

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* For example, graduate schools of management often encourage prospective student to gain some work experience before pursuing and MBA degree.

D. Continuation to Advanced Levels

Indicator 2:12 Graduate Record Examination (GRE) Scores

The Graduate Record Examination (GRE) is a measure of the general learned abilities of prospective graduate students. It is used to predict performance in graduate school. No good measure of the amount of learning acquired during college exists. The GRE, although taken by less than a third of college graduates, is the best broad-based measure of general learned abilities that exists for prospective graduate students. However, the reader should be aware of the limitations of average GRE which include: 1) the proportion of college graduates taking the exam changes over time, 2) an increasing proportion of foreign students are taking the exam, and 3) some students take the exam more than once.

- **The average total score on the GRE fell 70 points between 1965 and 1979. Since then it has increased 47 points.**
- **The average quantitative score on the GRE has risen 51 points since 1975, and is now higher than at any time in the last two decades. The verbal score has risen 14 points since 1982, but has not yet reached levels of the mid-1960s.**
- **Quantitative scores dropped less and started rising sooner than verbal scores.**

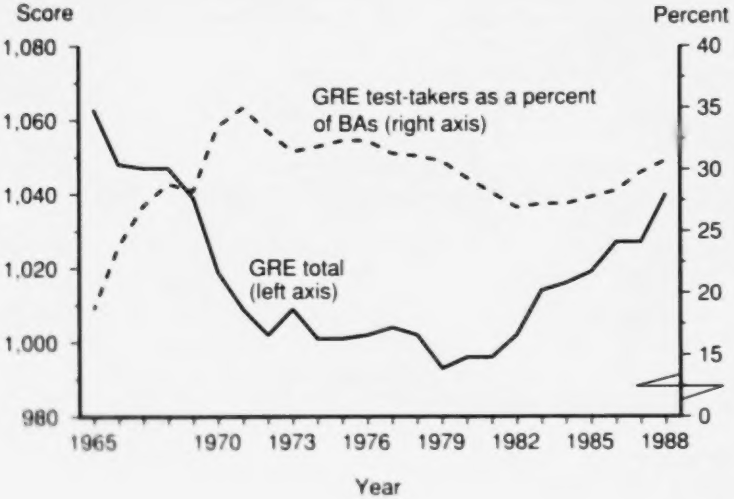
Graduate Record Exam scores and number of test-takers: 1965–1988 (selected years)

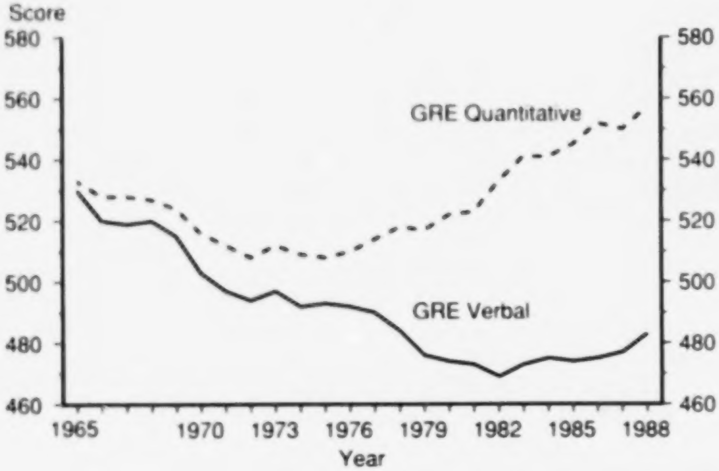
Year	GRE Test-takers		GRE Scores		
	Number	Percent of BAs*	Total	Verbal	Quantitative
1965	93,792	18.7	1,063	530	533
1967	151,134	27.0	1,047	519	528
1969	206,113	28.3	1,039	515	524
1971	293,600	35.0	1,009	497	512
1973	290,104	31.5	1,009	497	512
1975	298,335	32.3	1,001	493	508
1976	299,292	32.3	1,002	492	510
1977	287,715	31.3	1,004	490	514
1978	286,383	31.1	1,002	484	518
1979	282,482	30.7	993	476	517
1980	272,281	29.3	996	474	522
1981	262,855	28.1	996	473	523
1982	256,381	26.9	1,002	469	533
1983	263,674	27.2	1,014	473	541
1984	265,221	27.2	1,016	475	541
1985	271,972	27.8	1,019	474	545
1986	279,428	28.3	1,027	475	552
1987	293,560	29.7	1,027	477	550
1988	303,703	30.7	1,040	483	557

* Ratio of the number of GRE test takers to the number of baccalaureate degrees awarded expressed as a percent.

SOURCE: Educational Testing Service and U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred.

Chart 2:12 Graduate Record Examination (GRE) scores and number of test-takers as a percent of baccalaureate degrees: 1965–1988





SOURCE: Educational Testing Service and U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred.

D. Continuation to Advanced Levels

Indicator 2:13 Continuation to graduate school

Postgraduate education is where the most advanced levels of knowledge are acquired. Scientific advances depend in large part on a continuing supply of highly educated young scientists. The renewal of faculty in colleges and universities depends on new generations of PhDs and other advanced degree recipients. Law, medicine, and business are other fields that depend on students pursuing postgraduate education. In most fields, the percent of baccalaureate degree recipients enrolling in graduate school, as opposed to taking full-time jobs, is a measure of the future supply of advanced talent in those fields.

- **The proportion of baccalaureate degree recipients in the arts and sciences who go on to graduate school immediately following graduation is much larger than it is for those who major in technical or professional fields as undergraduates.**
- **Arts and science graduates in 1986 were more likely to take full-time jobs following graduation than those in 1980 or 1984.**

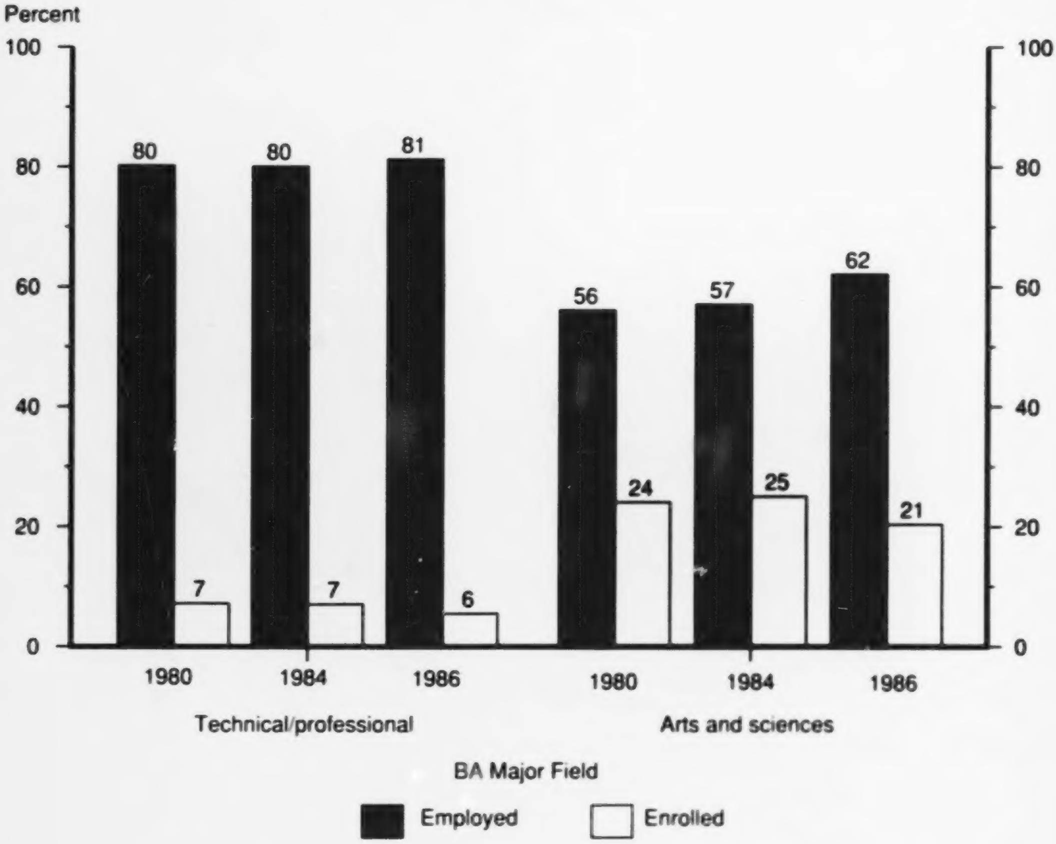
Percent of baccalaureate degree recipients employed full-time or enrolled in school 1 year after graduation: Years of graduation 1980, 1984, and 1986

	1980		1984		1986	
Major field of study	Employed	Enrolled	Employed	Enrolled	Employed	Enrolled
All fields	71	13	71	13	74	11
Technical/professional	80	7	78	7	81	6
Arts and sciences	56	24	55	25	62	21
Other	74	10	75	9	75	9
Technical/professional						
Engineering	84	8	79	10	83	8
Business and management	83	7	83	4	85	4
Health	77	6	73	9	75	8
Education	76	7	73	7	75	6
Public affairs/social services	77	10	71	9	75	8
Arts and sciences						
Biological sciences	46	35	45	38	42	41
Physical sciences/mathematics	59	30	45	36	75	13
Psychology	56	27	56	23	65	17
Social sciences	61	22	59	24	60	23
Humanities	56	17	58	19	58	20

NOTE: Data were collected in 1981, 1985, and 1987, 1 year after graduation. Employed includes employed full-time or in the military. Enrolled includes those enrolled and not employed full-time. Those neither employed full-time nor enrolled may be employed part-time, unemployed, or not in the labor force.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

Chart 2:13 Percent of baccalaureate degree recipients employed full time or enrolled in school 1 year after graduation



SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

E. Economic Outcomes

Postsecondary education is an investment in human skills. The investment involves both a cost and a return. The cost includes tuition, books, and fees, but also earnings given up by not working or by working part time while in college. The returns come in many forms. Some are pecuniary, others are nonpecuniary. Some are related to the labor market, others are not. Among the returns related to the labor market are better employment opportunities, jobs that are less sensitive to general economic conditions, better opportunities to participate in employer-provided training, better working conditions, and higher earnings. Other returns not related to the labor market include greater interest and participation in civic affairs, better health and longer life, and reduced criminal behavior.

The costs and returns to investing in postsecondary education change over time,* which affects the incentive for individuals to participate. The purpose of the measures presented in this section are to provide indicators of changes in the rewards to investing in postsecondary education.

These indicators suggest some general conclusions. First, the labor market opportunities of male college graduates are strong and do not vary downward during recession years. Consistently, over 90 percent of college graduate men are employed. On the other hand, the labor market opportunities of male high school graduates are more variable and seem to have drifted downward just slightly during the 1971–1988 period. The ratio of average annual earnings of college graduates to high school graduates provides an indication of the incentive to attend college. For males 25-29 years old, the college premium increased from 16 percent in 1975 to 43 percent in 1987. For 30- to 34-year-olds, it increased from 44 to 57 percent. The earnings premiums of college graduates in recent years (1985–1987) are at their highest levels of the 1975–1987 period.

Second, the labor market opportunities of women, both high school graduates and those who attend college, grew enormously between 1971 and 1988. The proportion of females 25-34 years old with 4 or more years of college who are employed has increased from 57 to 81 percent over the period. The proportion of high school graduate women employed grew from 43 to 67 percent over the same period. The earnings advantage enjoyed by college graduate women over their high school graduate counterparts is even larger than it is for men. For females 25-29 years old, the advantage was 68 percent in 1987. For 30- to 34-year-olds, it was 83 percent. These were among the highest earnings premiums enjoyed by college women during the 1975–1987 period.

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* See Murphy, Kevin and Finis Welch. "Wage Premiums for College Graduates: Recent Growth and Possible Explanations." *Educational Researcher*, May 1989 for a more detailed presentation of changes between 1964 and 1986 in the relative earnings of workers with different levels of education and experience by sex and race.

E. Economic Outcomes

Indicator 2:14 Employment of young adults

The percentage of a population group with jobs is influenced by a variety of factors. First, it depends on the willingness of employers to offer jobs to individuals with different amounts of education at the going wage rate. Second, it depends on the willingness of these individuals to take jobs at the going wage rate. The higher the proportion employed, the better are their labor market opportunities relative to other things they could do, and vice versa.

- **In the early 1970s, over 90 percent of male high school graduates 25-34 years old with no college education were employed. This was comparable to the rates for men with 1-3 or even 4 or more years of college.**
- **Among men with only 12 years of schooling, the percent employed fell relative to those with more schooling during the late 1970s and 1980s. The percent employed fell sharply in the early 1980s and then increased—it was 87 percent in 1988.**
- **Since 1971, the employment rates of all women 25-34 years old has been increasing. However, the employment rates of those who finished college have remained at least 14 points higher than those who only finished high school throughout the 1971–1988 period. In recent years, the employment rate of women with some college has been about midway between the rate for women with high school only and those with 4 or more years of college.**

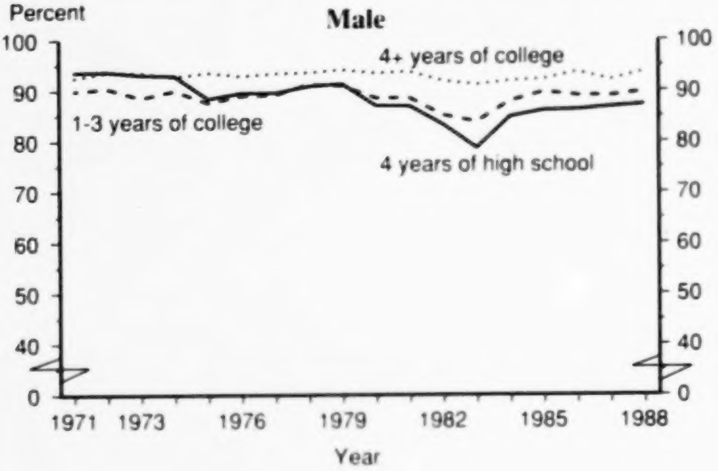
Percent of 25- to 34-year-olds employed, by sex and years of schooling completed: 1971–1988 (selected years)

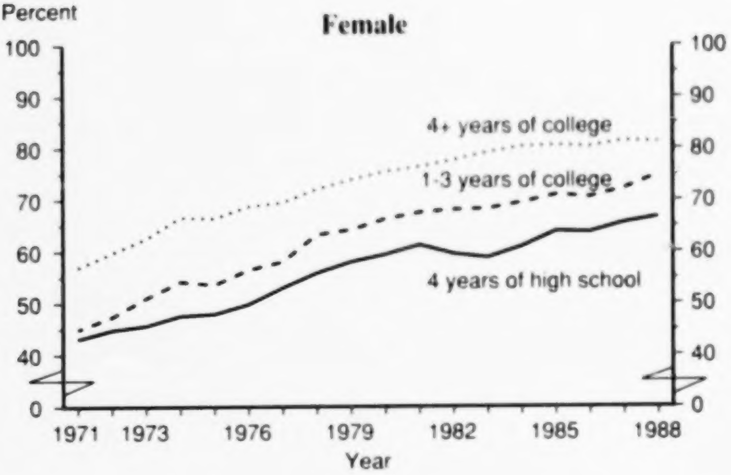
Year	Male			Female		
	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
			Percent			
1971	93.6	89.9	92.5	43.1	44.9	56.9
1973	93.1	88.5	93.5	45.7	51.0	62.6
1975	88.4	87.6	93.5	48.0	53.6	66.4
1977	89.5	89.1	93.3	53.0	58.0	69.5
1979	91.3	90.9	94.1	58.0	64.2	74.0
1981	86.9	88.5	93.7	61.3	67.6	76.4
1983	78.6	83.8	91.1	58.8	68.3	79.2
1984	84.8	87.9	91.9	61.0	69.5	80.4
1985	86.1	89.7	92.2	63.9	71.0	80.6
1986	86.2	89.0	93.7	63.8	70.6	80.3
1987	86.8	89.0	92.1	65.6	72.2	81.4
1988	87.2	89.8	93.7	66.8	74.8	81.2

NOTE: See supplemental note 2:14 for a comparison of the employment to population ratio, presented in this table, to other labor force statistics.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, various years and unpublished tabulations.

Chart 2:14 Percent of 25- to 34-year-olds employed: 1971–1988





SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, various years and unpublished tabulations.

E. Economic Outcomes

Indicator 2:15 Annual earnings of young adults

Wages and salaries are influenced by many factors. Among these are the employer's perception of the productivity of employees with different levels of education and the availability of such employees. Another factor is the economic conditions in the industries that typically employ workers with different levels of education. *Annual* earnings are influenced by the number of weeks worked in a year and the usual hours worked each week. The ratio of earnings of college graduates to high school graduates is a measure of the (money) rate of return to the investment in 4 years of college education.

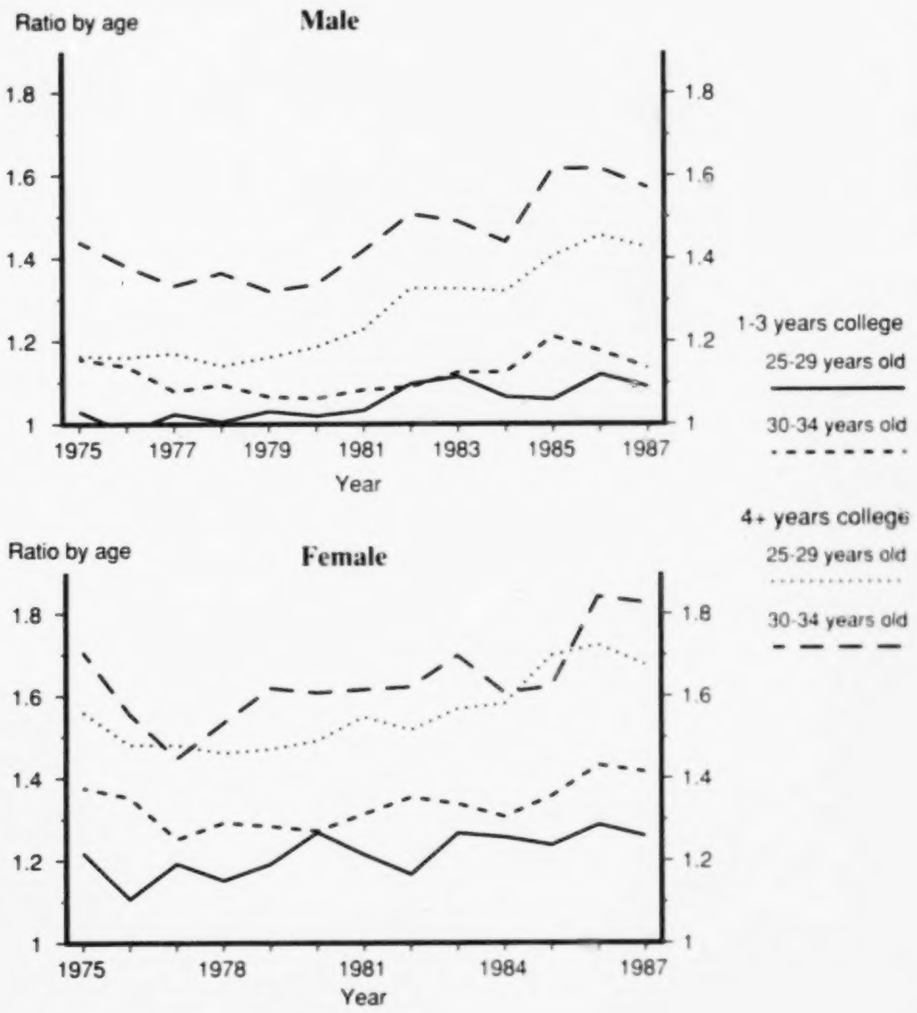
- **For both males and females, the earnings advantage of college graduates has increased during the 1980s. For example, the earnings advantage of male college graduates 25-29 years old graduates over their counterparts with only 4 years of high school more than doubled between 1980 and 1987—rising from 19 percent to over 43 percent.**
- **For males and females, the college premium increases with time in the labor market. For example, in 1987 male college graduates 25-29 years old earned 43 percent more than high school graduates of the same age; college graduates 30-34 years old earned 57 percent more than high school graduates their age.**
- **The premium earned by female college graduates is larger than it is for men. In 1987 women 30-34 years old with 4 or more years of college earned 83 percent more than women of the same age with only 12 years of schooling. Male college graduates earned 57 percent more.**

Ratio of mean annual earnings of all workers with 1-3 and 4 or more years of college to those with 4 years of high school, by sex and age: 1975–1987 (selected years)

	Males				Females			
	1-3 years of college		4 or more years of college		1-3 years of college		4 or more years of college	
Year	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old
1975	1.030	1.156	1.163	1.439	1.219	1.377	1.560	1.707
1977	1.024	1.079	1.170	1.333	1.192	1.251	1.480	1.448
1979	1.030	1.066	1.161	1.321	1.192	1.283	1.471	1.619
1980	1.019	1.062	1.185	1.336	1.268	1.272	1.491	1.607
1982	1.097	1.089	1.328	1.506	1.166	1.353	1.517	1.622
1984	1.065	1.125	1.321	1.439	1.256	1.306	1.580	1.607
1985	1.060	1.212	1.406	1.616	1.237	1.356	1.698	1.623
1986	1.119	1.176	1.455	1.616	1.286	1.431	1.724	1.841
1987	1.089	1.134	1.425	1.570	1.259	1.415	1.676	1.827

SOURCE: U.S. Department of Commerce, Bureau of the Census, Series P-60, *Current Population Reports*, "Money Income of Families and Persons . . . ," various years.

Chart 2:15 **Ratio of mean annual earnings of all workers with 1-3 and 4 or more years of college to those with 4 years of high school, by age and sex: 1975–1987**



SOURCE: U.S. Department of Commerce, Bureau of the Census, Series P-60, *Current Population Reports*, "Money Income of Families and Persons . . .," various years.

F. Output and Productivity of Colleges and Universities

The postsecondary education system is the primary source of advanced knowledge and skills for the economy and society. When the higher education system awards a degree to an individual, it is an indication that the system has added an incremental unit of knowledge and skill to the available stock. As such, the number of degrees conferred by level and field provides measures of the quantity and type of knowledge being produced by the system, embodied, of course, in its graduates. The output of the higher education system depends on the inputs to the system as well as the productivity of the system. Not all of the produced knowledge stays in the United States. The higher education system trains and awards degrees to many foreign students; higher education today is an export industry.

Despite the fact that all the baby boom babies have been above college age since 1985, the number of baccalaureate degrees awarded has not declined.* The distribution of major fields, however, has been changing. In general, the share of degrees in the humanities and sciences has fallen, and the share in professional fields has risen. The exception was education, whose share declined significantly. Between 1971 and 1988, the share of degrees in business and other technical/professional fields almost doubled, increasing from 24 percent in 1971 to 42 percent in 1988. On the other hand, the share of degrees in education fell from 22 percent to 9 percent. Most recently, there has been a turnabout. The share of degrees in the humanities and social sciences increased slightly between 1984 and 1988, and the share in computer sciences and engineering decreased slightly.

In contrast to the slow growth of baccalaureate degrees, the number of associate degrees increased 80 percent between 1971 and 1985, but has fallen somewhat since.

At the graduate level, master's degrees numerically are very important. In 1988, almost 300,000 master's degrees were awarded in contrast to 70,000 first-professional degrees and 35,000 doctoral degrees. Two-thirds of master's degrees are awarded in education, business, and other technical/professional fields. In 1971 education accounted for 39 percent and business and other technical/professional fields for 24 percent of master's degrees. In 1988, that distribution essentially reversed—education accounted for 26 percent and business and other technical/professional fields for 42 percent of master's degrees.

The number of doctoral degrees changes very little when compared with changes in master's or first-professional degrees. The low for the 1971-to-1988 period was 32,107 in 1971; the high was 34,839 in 1988, an 8.5 percent increase. In fact, between 1984 and 1988 there seems to have been a slight upward trend in doctoral degrees awarded. However, the share of these degrees awarded to U.S. citizens fell from 89.7 percent in 1977 to 80.6 percent in 1989. Given the expected retirement of a large number of faculty in the next decade, colleges and universities are worried that they will have difficulty finding new faculty to replace the retiring ones. The share of doctoral degrees in the natural sciences fell from 28.8 percent in 1971 to 22.5 percent in 1976. In 1988 it stood at 23.4 percent. The precipitous decline between 1971 and 1976 has not continued. However, the share of those natural science doctoral degrees awarded to U.S. citizens has fallen. The U.S. citizen share stood at 81.4 percent in 1977, but by 1988 fell to 72.7 percent. In 1988 foreign students earned 45.5 percent of all doctoral degrees in computer science and engineering. In contrast to the slow growth of doctoral degrees, the number of first-professional degrees, which includes law and medicine, grew enormously between 1971 and 1985—it almost doubled. However, between 1985 and 1988 the number fell somewhat.

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* The share of baccalaureate degrees awarded to foreign students is small—3 percent in 1987.

F. Output and Productivity of Colleges and Universities

Indicator 2:16 Degrees conferred, by level

Trends in the number of degrees conferred, by level, provide clues to changes in the productivity of the Nation's higher education system, the allocation of resources within the system, and the level of trained individuals within the society. Viewed in relation to population levels, the data show whether degrees have lagged behind or exceeded population growth.

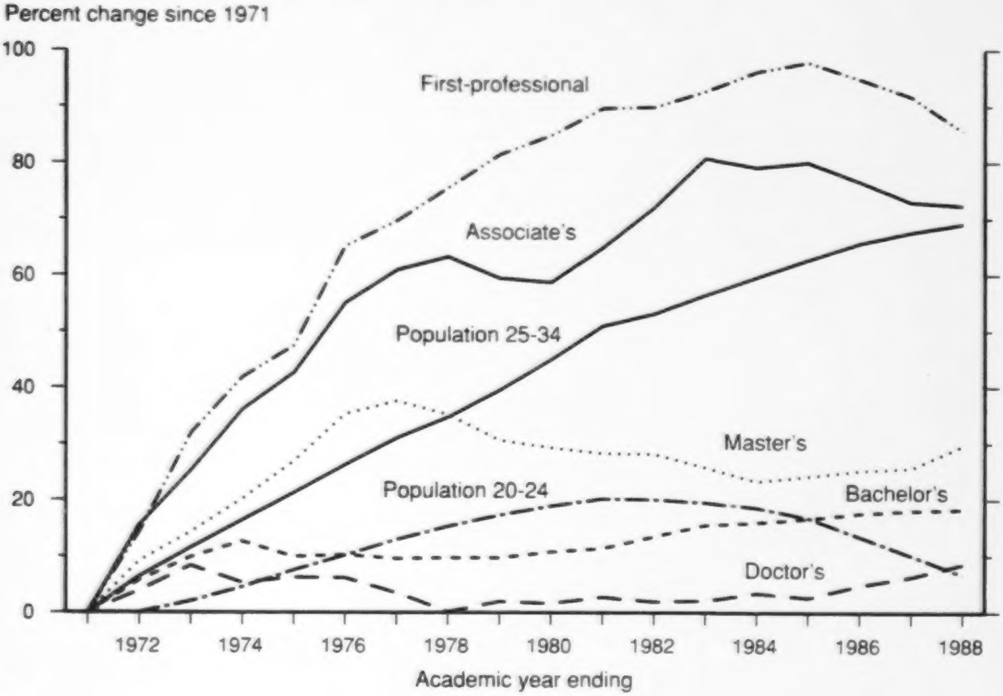
- **The number of bachelor's degrees grew each year in the 1980s, even though the traditional college-age population (aged 20-24) declined during much of the period.**
- **The number of associate degrees grew rapidly during the 1970s and early 1980s but declined in 4 of the 5 years between 1983 and 1988.**
- **Master's degrees, following annual declines from the late 1970s through the mid-1980s, grew in number each year after 1984.**
- **The number of first-professional degrees increased dramatically in the 1970s. It continued to grow, at a slower pace, up to 1985 and then declined.**
- **The number of doctor's degrees fluctuated between 32,000 and 34,000 degrees during the 1971–88 period. Although that number grew annually after 1985 to its highest-ever level in 1988, doctoral recipients comprised a smaller percent of the 25- to 34-year-old population in 1988 than they had in 1971 (.079 vs. .124 percent).**

Percent change since 1971 in number of degrees and in population

	1973	1975	1977	1979	1981	1983	1985	1987	1988
Number of degrees:									
Associate	25	43	61	59	65	81	80	73	72
Bachelor's	10	10	10	10	11	15	17	18	18
Master's	14	27	38	31	28	26	24	26	30
Doctor's	8	6	4	2	3	2	3	6	9
First-professional	32	47	70	81	90	93	98	92	86
Population:									
Aged 20-24	2	8	13	17	20	20	17	10	7
Aged 25-34	11	21	31	39	51	56	63	68	69

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS survey of degrees conferred, various years. U.S. Department of Commerce, Bureau of the Census, population estimates.

Chart 2:16 **Percent change in number of degrees, by level, and in population, since 1971: Academic years ending 1972–1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS survey of degrees conferred, various years. U.S. Department of Commerce, Bureau of the Census, population estimates.

F. Output and Productivity of Colleges and Universities

Indicator 2:17 Bachelor's degrees conferred, by field

Shifts in the fields in which students major affect the demand for courses and the supply in the various job markets. These shifts are indicated by changes in the number and proportion of bachelor's degrees conferred in different fields.

- **Between the mid-1970s and the mid-1980s, the number of bachelor's degrees conferred in the humanities, social and behavioral sciences, natural sciences, and education declined. In contrast, the number conferred in the computer sciences, engineering, business, and other technical/professional fields[*] increased.**
- **Since the mid-1980s, there has been a reversal in some of the above-mentioned trends. Most notably, degrees in the humanities and the social and behavioral sciences are up, whereas degrees in the computer sciences, engineering, and other technical/professional fields are down.**

Bachelor's degrees conferred, by field of study: Selected academic years ending 1972–1988

Field of study	1972	1976	1980	1984	1988
Percent change in number of degrees conferred since 1971:					
Total	5.7	10.2	10.7	16.0	18.3
Humanities and social/behavioral sciences	4.1	-2.9	-16.3	-20.7	-15.2
Natural sciences	-0.3	11.9	-1.0	-7.9	-14.1
Computer sciences and engineering	4.1	-0.9	52.7	141.5	135.2
Education	8.3	-12.3	-33.1	-47.7	-48.5
Business and other technical/professional	9.0	56.4	91.8	114.9	119.3
Business	5.7	24.0	61.4	100.3	111.9
Other technical/professional	14.1	104.6	137.1	136.7	130.4
Percent of total degrees conferred:					
Humanities and social/behavioral sciences	39.5	35.3	30.3	27.4	28.7
Natural sciences	9.2	9.9	8.7	7.8	7.1
Computer sciences and engineering	6.1	5.6	8.6	13.0	12.4
Education	21.6	16.7	12.7	9.5	9.2
Business and other technical/professional	23.6	32.5	39.6	42.4	42.4
Business	13.7	15.4	19.9	23.6	24.5
Other technical/professional	9.9	17.1	19.7	18.8	17.9

NOTE: Data for 1988 are preliminary.

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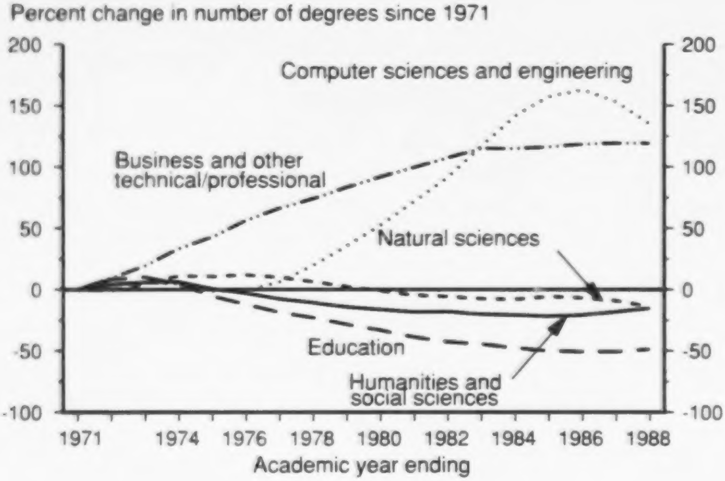
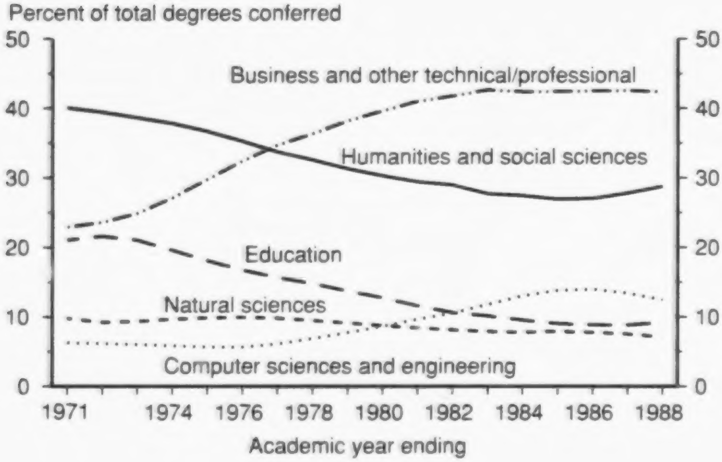
[*] For a definition of other technical/professional fields, see appendix table 2:17-1.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Chart 2:17 **Bachelor's degrees conferred, by field of study: Academic years ending 1971–1988**





SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

F. Output and Productivity of Colleges and Universities

Indicator 2:18 Master's degrees conferred, by field

Trends in students' field of concentration, as reflected in changes in the number and proportion of degrees conferred in different fields, provide information on changing student interests and may provide clues about changes in the demand for faculty in different disciplines.

- **From the mid-1970s to the mid-1980s, there was a substantial shift in the proportion of master's degrees conferred in education and in business and other technical/professional fields[*].**
- **In 1971, education accounted for 39 percent of master's degrees, and business and other technical/professional fields for 24 percent. By 1988, education had declined to 26 percent of master's degrees, whereas business and other technical/professional fields had risen to 42 percent.**
- **Master's degrees as a whole declined in number during the first part of the 1980s but then rose each year after 1984. Since that year, the number conferred in mathematics, computer sciences, and engineering grew at a much faster rate than the total number conferred.**

Master's degrees conferred, by field of study: Selected academic years ending 1971–1988

	Percent change in number of conferred since 1971				Percent of degrees conferred				
Field of study	1976	1980	1984	1988	1971	1976	1980	1984	1988
Total	35	29	23	30	100	100	100	100	100
Humanities and social/behavioral sciences	9	-3	-8	-10	22	18	16	16	15
Natural sciences	-8	-16	-21	-19	7	5	5	5	5
Computer sciences and engineering	5	10	49	81	8	6	7	9	11
Education	44	17	-13	-13	39	41	35	27	26
Business and other technical/professional	67	98	115	123	24	30	37	42	42

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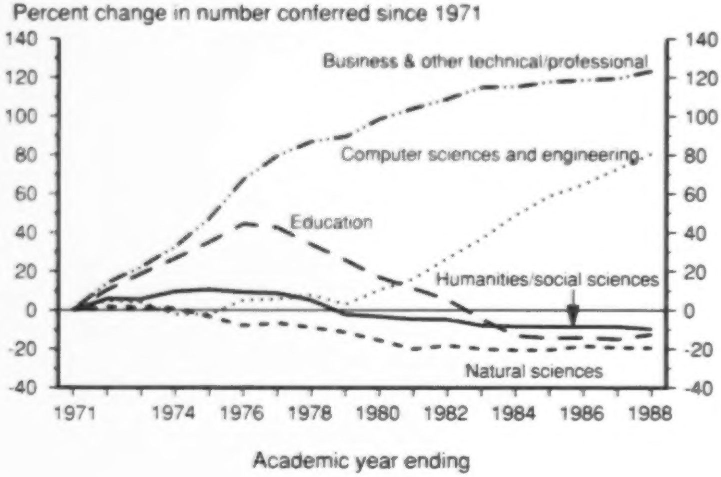
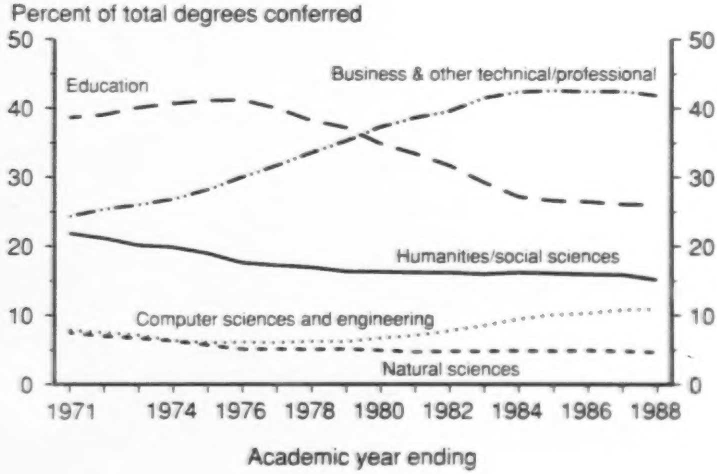
[*] For a definition of other technical/professional fields, see appendix table 2:18-1.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Chart 2:18 Master's degrees conferred, by field of study: Academic years ending 1971–88





SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

F. Output and Productivity of Colleges and Universities

Indicator 2:19 Doctor's degrees conferred, by field

Trends in field of study at the doctoral level, as reflected in changes in the number and proportion of degrees conferred, may provide clues about changes in the supply of faculty and research personnel in various fields.

- **Following a substantial decline in the 1970s, the number of doctor's degrees conferred in the natural sciences has risen each year since 1984, outpacing the growth in total doctorates. Still, the number conferred in these sciences remains below the level attained in the early 1970s.**
- **During the 1970s, engineering doctorates declined sharply, but since 1980 they have increased substantially. Between 1980 and 1988, they grew at a much faster rate than doctorates as a whole (67 vs. 7 percent).**
- **The number of doctorates in education grew during much of the 1970s but fell each year after 1980. Since that year, they have declined 18 percent while total doctorates have increased 7 percent.**
- **Between 1971 and 1988, the number of degrees in business and other technical/professional[*] fields grew much more than doctorates as a whole.**

Doctor's degrees conferred, by field of study: Selected academic years ending 1971–1988

	Percent change in number of degrees conferred since 1971				Percent of total degrees conferred	
Field of study	1976	1980	1984	1988	1971	1988
Total	6.1	1.6	3.4	8.5	—	—
Humanities and social/behavioral sciences	24.0	11.6	7.1	3.4	30.5	29.1
Natural sciences	-16.8	-19.3	-19.4	-11.7	28.8	23.4
Engineering	-22.5	-31.1	-18.1	15.2	11.3	12.0
Education	21.5	24.0	16.7	2.2	19.9	18.8
Business and other technical/professional	16.8	22.0	57.4	65.6	9.0	13.8

—Not applicable.

NOTE: Degrees in computer sciences and unknown fields are not shown.

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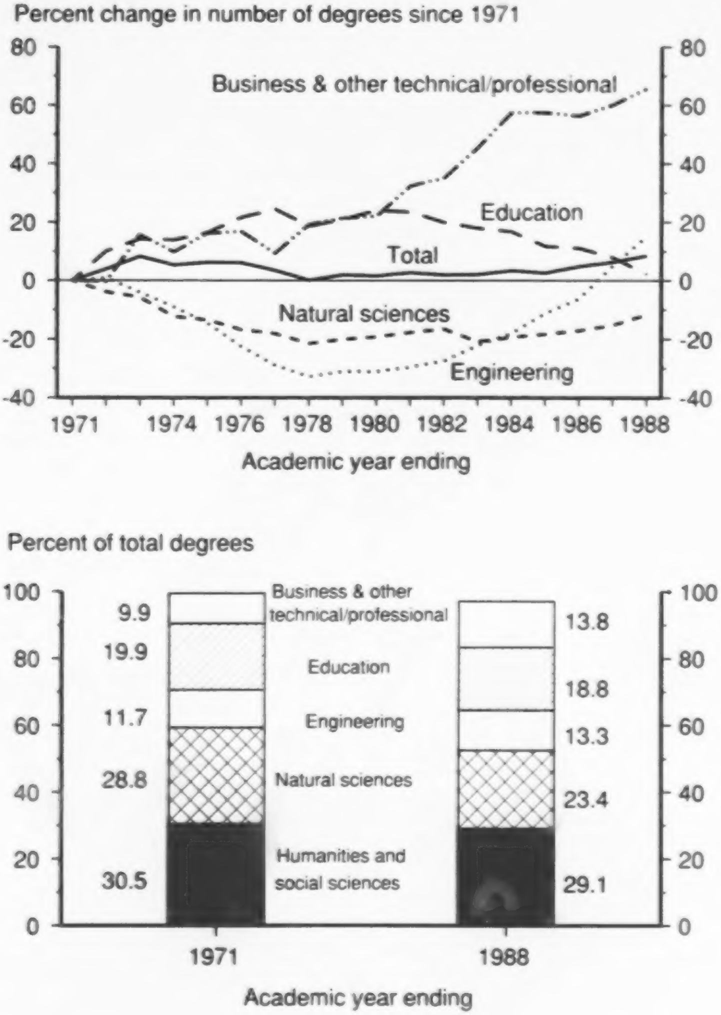
[*] For a definition of other technical/professional fields, see appendix table 2:19-1.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Chart 2:19 **Doctor's degrees conferred, by selected field of study: Academic years ending 1971–88**



SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

F. Output and Productivity of Colleges and Universities

Indicator 2:20 Graduate degrees earned by foreign students

The size of the foreign student population in the Nation's colleges and universities is significant for several reasons. It can affect enrollment levels and, in turn, influence the amount and allocation of material, personnel, and financial resources. It may also affect U.S. economic competitiveness, depending on whether students stay in this country to work or whether they return to their homelands after completing their studies.

- **During the decade from 1977 to 1987, foreign students* earned an increasing proportion of the graduate degrees awarded by American colleges and universities. By 1987, they were earning 10 percent of the master's degrees and 19 percent of the doctor's degrees.**
- **Growth in the proportion of graduate degrees earned by foreign students was greatest in the physical sciences, mathematics, and computer sciences and engineering. In 1987, foreign students earned about 45 percent of the doctorates in mathematics and engineering.**
- **While the number of foreign students earning doctorates increased 76 percent during the 1977–87 decade, the number of Americans earning such degrees declined 7 percent.**
- **Of the foreign students earning doctorates in the natural and computer sciences and engineering in 1987, 36 percent had definite plans for postdoctoral study or employment in the United States. Ten years earlier, 28 percent had had such plans.**

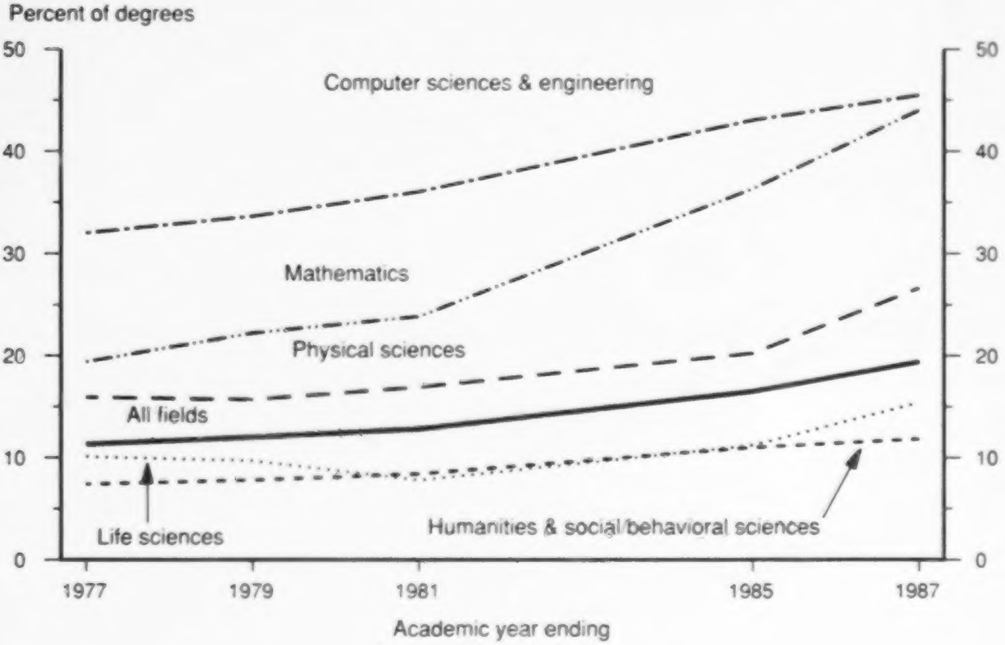
Doctor's degrees earned by foreign and American students: 1977 and 1987

	Percent earned by foreign students		Percent change in number of degrees, 1977-1987	
Field of study	1977	1987	Foreign students	American students
All fields	11.3	19.4	75.8	-6.5
Humanities and social/behavioral sciences	7.4	11.8	44.1	-14.3
Natural sciences	13.7	23.3	76.0	-8.2
Life sciences	10.1	15.4	54.1	-5.4
Physical sciences	15.9	26.6	83.3	-4.0
Mathematics	19.4	44.0	98.8	-38.9
Computer sciences and engineering	32.0	45.5	113.9	20.3
Computer and information sciences	20.8	33.7	180.0	45.0
Engineering	32.9	46.7	110.4	17.9
Technical/professional	8.7	14.0	68.5	-2.3

NOTE: Foreign students are non-United States citizens holding temporary U.S. visas. American students include non-United States citizens with permanent U.S. visas.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred. National Research Council, Survey of Earned Doctorates.

Chart 2:20 **Percent of doctor's degrees earned by foreign students in American colleges and universities, by selected field of study: Selected academic years ending 1977–87**



NOTE: Foreign students are non-United States citizens on temporary visas. American students include non-United States citizens with permanent U.S. visas.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred. National Research Council, Survey of Earned Doctorates.

II. Context

College enrollment increased substantially during the late 1960s and 1970s as the post-World War II baby boomers came of college age. Enrollment increased by a third in the 5 years between 1967 and 1972.* It increased another one-third between 1972 and 1982, at which time those born at the peak of the baby boom, 1957, would be finishing college. However, between 1982 and 1985 enrollment declined only slightly, even though the size of the traditional college-going age group declined considerably. This was due to: (1) higher enrollment rates among 16- to 24-year-olds (*Indicator 2:2*), and (2) higher enrollment rates among females 25-34 years old. Between 1985 and 1988, total enrollment was rising again.

Between 1972 and 1988, enrollment increased in all sectors of higher education. However, it increased the most in public 2-year colleges. Their share of total enrollment increased from 29 to 35 percent. In contrast, public 4-year institutions' share of enrollment dropped from 48 percent in 1972 to 42 percent in 1988.

In the early 1970s, about 22 percent of undergraduates 16-34 years old indicated they attended part time. That had not changed appreciably by 1988, when 25 percent indicated they attended part time. Students attending 2-year colleges are more likely to attend part time than students attending 4-year colleges. However, students 25-34 years old, whether attending 2-year or 4-year colleges, are more likely to attend part time than students 16-24 years old.

Graduate students are also more likely to attend part time. They accounted for 14.6 percent of all students 16-34 years old in 1988. In the absence of other changes, as the baby boom cohort ages, the graduate student share of total enrollments is expected to decline.

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* U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years.

G. Size and Growth

Indicator 2:21 College and university enrollment, by type and control of institution

Colleges and universities offering 2- and 4-year programs under public and private control address somewhat different student needs. Variations in enrollment trends may indicate changing demand for the kinds of services offered by the various institutions.

- **Enrollment in higher education increased 42 percent between 1972 and 1988. Following a decline in the mid-1980's, enrollment has risen each year since 1985, despite a substantial decline in the traditional college-age population (18-24).**
- **Between 1972 and 1982, enrollment in public 2-year institutions rose much more rapidly than in public or private 4-year institutions. Since 1982, however, growth has been somewhat lower in public 2-year than in 4-year institutions.**
- **In 1988 as in 1972, public institutions accounted for a little over three-fourths of higher education enrollment.**

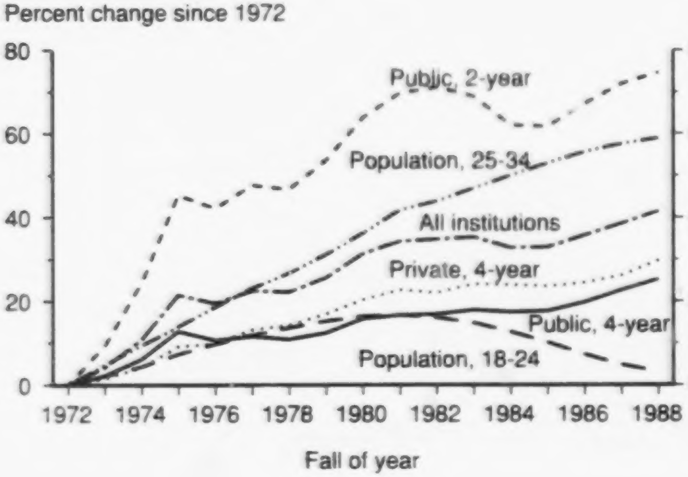
Enrollment in higher education, by type and control of institution, and population 18-34, by age: Selected years 1972–1988

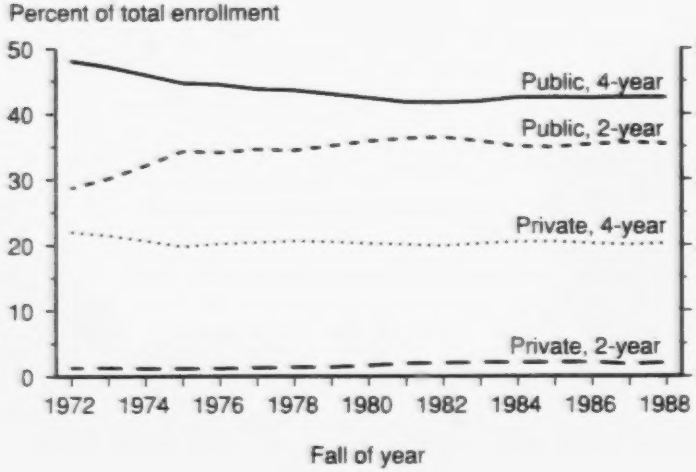
	Percent change since 1972				Percent of total enrollment				
Year	1976	1980	1984	1988	1972	1976	1980	1984	1988
Enrollment:									
All institutions	20	31	33	42	100	100	100	100	100
Public, 4-year	11	16	17	25	48	45	42	42	43
Public, 2-year	42	64	62	75	29	34	36	35	35
Private, 4-year	10	20	24	30	22	20	20	21	20
Private, 2-year	(*)	(*)	(*)	(*)	1	1	2	2	2
Population:									
18-24	10	16	13	3					
25-34	19	36	50	59					

* Not shown; see table 2:21-2 for explanation.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment, various years. U.S. Department of Commerce, Bureau of the Census, population estimates.

Chart 2:21 Higher education enrollment, by type and control of institution, and in population, by age: Fall 1972–fall 1988





SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment, various years. U.S.Department of Commerce, Bureau of the Census, population estimates.

G. Size and Growth

Indicator 2:22 Part-time enrollment of undergraduates

Students who enroll in college part time make slower progress, are less likely to finish their programs, and take longer to finish than full-time students. Part-time students participate less in nonacademic activities on campus, and generate fewer revenues for the college. However, older students and low income students may not be able to afford to attend full time.

- **About 1 in 4 undergraduate students 16-34 years old attends part time. This rate has been unchanged since 1977.**
- **Part-time attendance rates are much higher for older students and those in 2-year colleges.**
- **In the 1980s, approximately half of graduate students attended part time, and they comprised between 15 and 17 percent of all college students (supplementary table 2:22-1).**

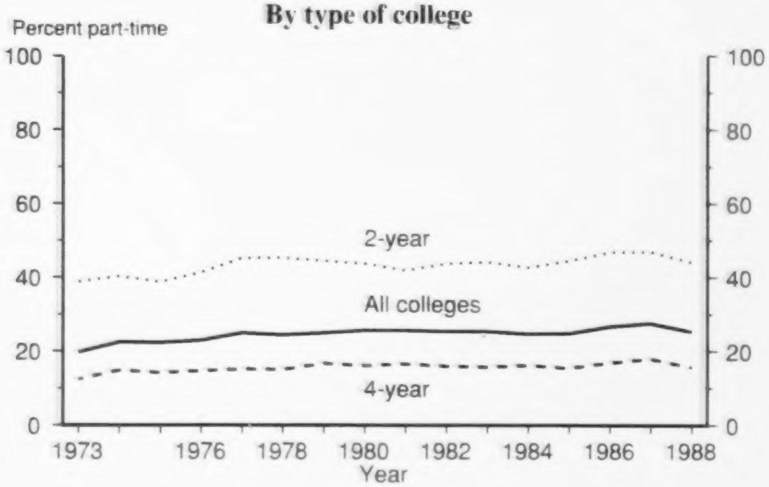
Part-time attendence status of undergraduates 16-34 years old, by age and type of college: 1973–1988

	16- to 34-year-olds			16- to 24-year-olds			25- to 34-year-olds		
Year	Total	4-year	2-year	Total	4-year	2-year	Total	4-year	2-year
				Percent part-time					
1973	19.7	12.4	38.8	12.3	7.6	26.7	61.2	49.4	75.2
1974	22.5	14.9	40.3	14.3	9.5	28.0	61.5	51.2	73.1
1975	22.3	14.2	38.8	14.1	8.0	28.5	59.8	51.7	63.5
1976	22.9	14.7	41.3	14.5	8.9	30.1	61.7	54.4	68.2
1977	24.9	15.2	45.3	15.5	8.4	34.1	63.6	55.2	71.9
1978	24.4	15.0	45.3	15.7	8.9	34.1	62.9	51.9	75.1
1979	24.9	16.7	44.4	15.7	9.2	33.8	65.8	60.6	72.4
1980	25.6	16.1	43.8	15.6	8.9	31.5	68.6	59.4	76.8
1981	25.6	16.5	41.9	15.4	8.5	31.5	76.4	57.6	70.7
1982	25.3	15.9	43.7	16.6	9.3	32.4	62.2	54.7	73.7
1983	25.3	15.7	44.1	15.8	8.8	32.2	61.6	51.8	71.7
1984	24.7	16.2	42.7	15.2	8.6	32.2	62.2	55.8	68.8
1985	24.8	15.4	44.5	14.9	7.7	32.6	54.6	55.0	71.3
1986	26.6	16.9	46.9	16.1	8.7	34.5	64.9	56.5	74.6
1987	27.6	18.0	47.0	17.7	9.9	36.1	67.0	60.1	75.0
1988	25.4	15.7	44.1	16.0	8.6	32.6	62.9	53.0	74.1

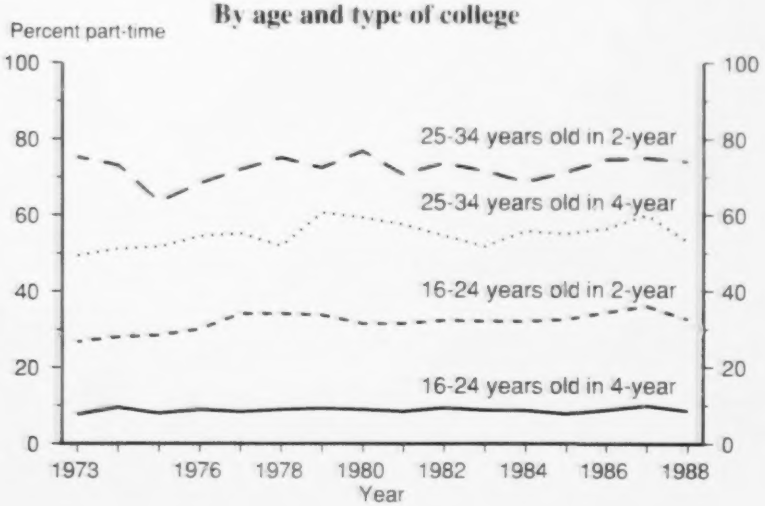
SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years.

Chart 2:22 **Percent of undergraduates 16-34 years old attending part time, by type of college and age: 1973–1988**

By type of college



By age and type of college



SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years.

H. Student Characteristics

The characteristics of postsecondary students are not static. As they change, the types and quantity of services provided by colleges and universities also may change to meet the needs of different types of students.

Between 1976 and 1988, the racial and ethnic make-up of college students changed somewhat. The proportion of students who are white and non-Hispanic fell 3.8 percentage points as the proportion from minority groups increased. However, the increase was not uniform among the various minority groups. The proportion of students who were black and non-Hispanic fell slightly, from 9.4 to 8.7 percent. The largest relative increase was among Asians, whose representation more than doubled from 1.8 to 3.8 percent of college students. The representation of Hispanic students also increased from 3.5 to 5.2 percent of college students. These changes were general, occurring in public as well as private, in 2-year as well as 4-year colleges and universities.

The types of institutions in which various racial and ethnic groups tend to enroll varies. For instance, in 1988, there were 1.2 black students for every Hispanic enrolled in 2-year colleges, but 2.2 black students for every Hispanic enrolled in a 4-year college. Much of this difference may be attributable to differences in the geographic distribution of the black and Hispanic populations in the United States. There is a high concentration of Hispanics in California, a state with a very large 2-year college system.

In 1988, fewer Asians students were in higher education than blacks or Hispanics—406,000 Asians compared to 881,000 non-Hispanic blacks and 587,000 Hispanics. However, enrollment of Asians was equal to Hispanics in private institutions and 4-year institutions, and enrollment of Asians was substantially less than Hispanics in public institutions and 2-year institutions (supplementary table 2:23-1).

The proportion of higher education students who are foreign, that is, nonresident aliens, has increased from 2.0 to 2.8 percent between 1976 and 1986. These students are concentrated in private colleges—4.3 percent of private college enrollment compared to 2.3 percent of public college enrollment—and in 4-year colleges—3.7 percent of 4-year college enrollment compared to 1.1 percent of 2-year college enrollment.

The family backgrounds of college students, measured in terms of family income and parent's education, is strongly associated with the type of college a student attends. Family income is positively associated with attendance at PhD-granting institutions, and negatively associated with attendance at 2-year colleges and less-than-2-year proprietary schools. The representation of college students from various family income ranges is approximately equal at public colleges and universities with no PhD programs.

Family background measured in terms of mother's or father's education yields very similar patterns to those in terms of family income. It is interesting to note, however, that with one exception, college students from all family income ranges are most likely to attend public 2-year colleges. The one exception is students with family income of $50,000 or more, who are most likely to attend a public PhD-granting institution.

Considerable attention has been given to the effects of working while in high school, with relatively little attention given to the issue among college students. However, it is among college students where the changes have been greatest. Students are increasingly likely to work while attending college. Among full-time college students, the proportion of men holding a job increased from 33 to 41 percent between 1970 and 1989. For women, the proportion working increased even more, from 33 to 46 percent. Black college students are substantially less likely to work than their white counterparts. For instance, in 1989, 29 percent of black full-time college students held jobs in contrast to 46 percent of whites.

Over the past 20 years, most part-time college students have also held jobs. For example, in 1989, 88 percent of white part-time college students also worked. However, their jobs are increasingly likely to be part-time jobs. For example, in 1971, 68 percent of white part-time college students worked full time and 14 percent worked part-time. In 1989, 61 percent worked full time and 27 percent worked part time.

In summary, a college student in the latter half of the 1980s was more likely than in the 1970s to be over 25, to be enrolled part time, and if enrolled full time, to be working. The student is somewhat more likely to be Asian or Hispanic.

Indicator 2:23 Distribution of college students, by race/ethnicity

Changes in the racial/ethnic mix of college enrollment suggest changes in the needs, interests, and backgrounds of the student body. They thus provide clues to the need to alter student programs and services.

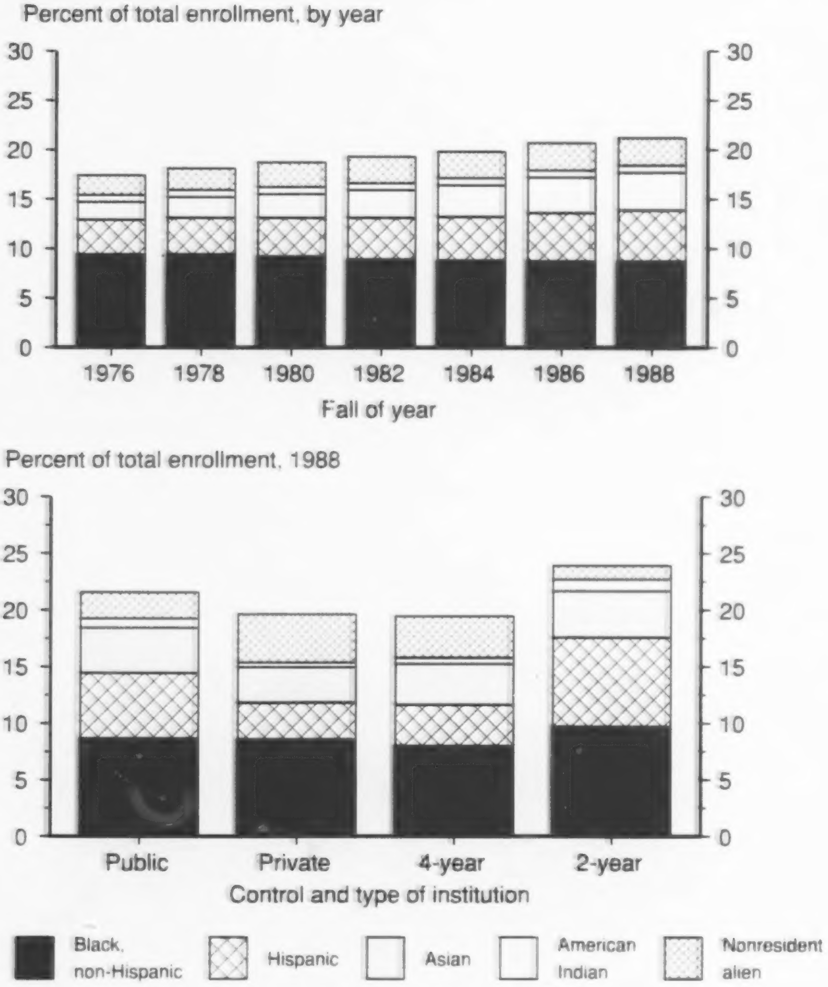
- **Between 1976 and 1988, the college student body became somewhat more heterogeneous. Minority students increased from 15 to 18 percent and nonresident aliens from 2 to 3 percent of total enrollment.**
- **As a percent of college students, blacks declined slightly whereas Hispanics and Asians increased in the 1976–88 period. In 1988, blacks made up 9 percent, Hispanics 5 percent, Asians 4 percent, and American Indians 1 percent of enrolled students.**
- **Minority students made up a higher proportion of the student body at 2-year than at 4-year institutions (23 vs. 16 percent in 1988) and at public than at private institutions (19 vs. 15 percent in 1988).**

Percent of total enrollment, by race/ethnicity

Item	White, non-Hispanic	Black, non-Hispanic	Hispanic	Asian	American Indian	Nonresident alien
			All institutions, by year			
1976	82.6	9.4	3.5	1.8	0.7	2.0
1980	81.4	9.2	3.9	2.4	0.7	2.5
1984	80.2	8.8	4.4	3.2	0.7	2.7
1986	79.3	8.7	4.9	3.6	0.7	2.8
1988	78.8	8.7	5.2	3.8	0.7	2.8
			By type and control of institution: 1988			
Public	78.4	8.7	5.8	4.0	0.8	2.3
Private	80.3	8.6	3.2	3.2	0.4	4.3
4-year	80.5	8.0	3.6	3.6	0.5	3.7
2-year	76.0	9.7	7.9	4.1	1.0	1.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment, various years.

Chart 2:23 **Percent of total enrollment in institutions of higher education by race/ethnicity, by year and by type and control of institution in 1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment in postsecondary and higher education, various years.

H. Student Characteristics

Indicator 2:24 Family background and enrollment choices of postsecondary students

Postsecondary students from different family backgrounds enroll in institutions of various types, which have different missions or purposes, at varying rates. The less association we see between family background and enrollment in institutions of various types, the closer the Nation is to achieving equality of educational opportunity.

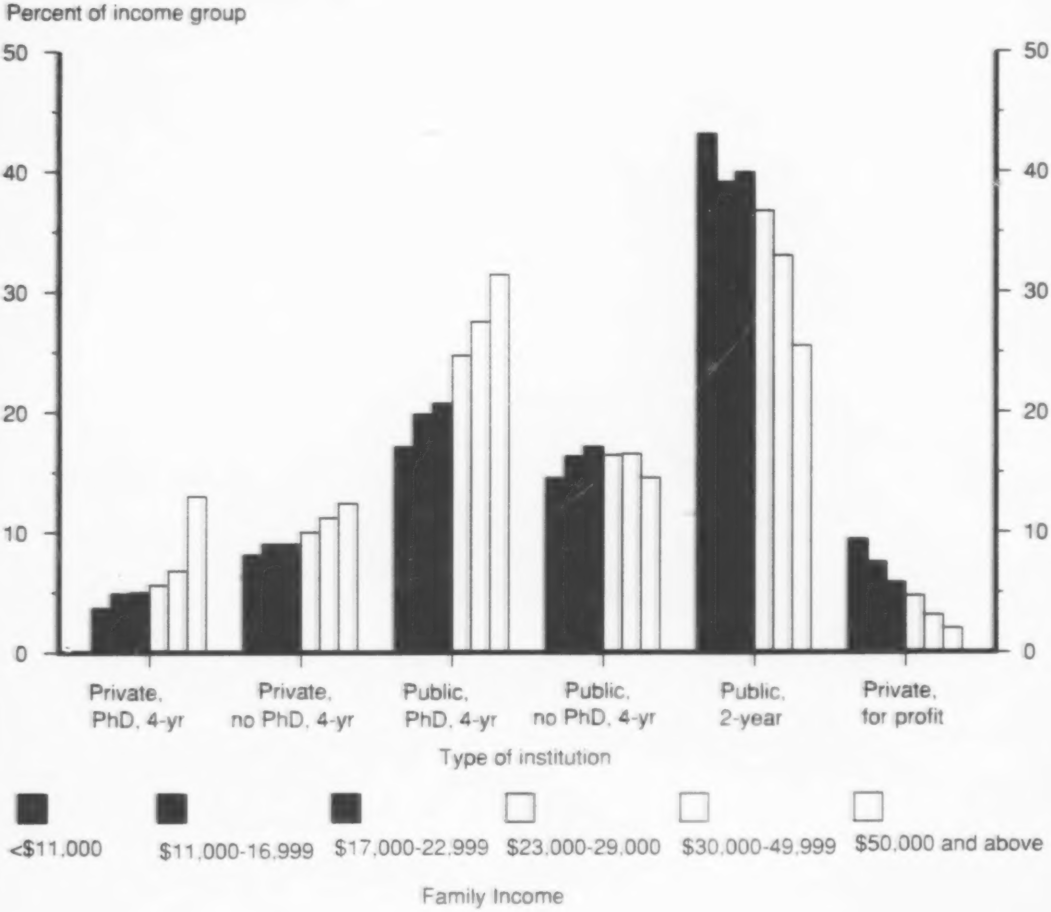
- **Generally, students from all family income levels are more likely to attend a public 2-year college than any other type of institution shown on the chart. The one exception is students with family incomes above $50,000 who are most likely to attend public, PhD-granting colleges or universities.**
- **The likelihood of attending a private, nonprofit institution increases with family income, while attendence at proprietary institutions decreases with income.**
- **Attendance at a PhD-granting university rises with family income. Attending public 2-year colleges is inversely associated with family income.**
- **Parents' educational background is similar to family income in its relation to enrollment patterns.**

Percent of postsecondary students enrolled in different types of institutions, by mother's education and family income: Fall 1987

	Private, nonprofit				Public					Private, for profit	
		4-year				4-year					
Student characteristics	All	PhD	No PhD	Less than 4-year	All	PhD	No PhD	2-year	Less than 2-year	All	Less than 4-year
Total	18.1	6.8	10.0	1.3	76.5	22.9	15.1	37.4	1.2	5.4	5.2
Family income status											
Less than $11,000	13.7	3.7	8.1	1.9	76.9	17.1	14.5	43.1	2.2	9.4	9.2
$11,000-16,999	15.5	4.9	9.0	1.5	77.0	19.8	16.3	39.1	1.7	7.5	7.3
$17,000-22,999	15.6	5.0	9.0	1.6	78.7	20.7	17.1	39.9	0.9	5.8	5.5
$23,000-29,000	16.8	5.6	10.0	1.1	78.5	24.7	16.4	36.7	0.8	4.7	4.4
$30,000-49,999	19.2	6.8	11.2	1.1	77.7	27.5	16.5	33.0	0.7	3.1	3.0
$50,000 and above	26.4	13.0	12.4	1.0	71.7	31.4	14.5	25.5	0.3	2.0	1.7
Mother's education											
Less than HS	13.2	3.6	7.7	1.9	77.9	14.3	14.1	47.4	2.1	8.9	8.6
High school only	16.5	5.2	9.9	1.4	77.9	21.8	15.9	39.1	1.1	5.6	5.3
Voc tech/lt 2 yrs pse	16.6	5.9	9.6	1.1	79.4	24.2	15.8	38.5	0.9	4.0	3.8
AA/gt 2 yrs pse	18.5	7.1	10.4	1.0	78.2	24.7	16.1	36.7	0.7	3.4	3.3
BA or BS	23.6	10.3	12.3	0.9	74.1	32.1	15.7	25.8	0.4	2.4	2.2
Advanced degree	30.4	15.6	13.7	1.2	68.0	33.2	13.8	20.6	0.4	1.6	1.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1986–87 National Postsecondary Student Aid Study*, Updated Record and Student Questionnaire Data File, CS 89-312m, 1989.

Chart 2:24 Percent of postsecondary students enrolled in different types of institutions, by family income: Fall 1987



SOURCE: U.S. Department of Education, National Center for Education Statistics, *The 1986–87 National Postsecondary Student Aid Study*, Updated Record and Student Questionnaire Data File, CS 89-312m, 1989.

H. Student Characteristics

Indicator 2:25 Working while in college

Working during the school year leaves less time for students to concentrate on their studies or to participate in other aspects of campus life. On the other hand, students may learn from work experience things that are not taught in the classroom. Co-op students alternate work and course-taking from semester to semester. Working to pay for the expenses of college could increase a student's desire to take full advantage of the opportunities available on campus. Work is one among a variety of means to cover college costs. If the alternatives become less attractive, more students may choose to work.

- **Over the 1970–1989 time period the percent of full-time college students who were also working increased. For men the percent employed rose from approximately 33 to 41 percent; for women it rose from 33 to 46 percent.**
- **Among full-time and part-time students (supplementary table 2:25-4), blacks were much less likely than whites to work while attending college.**
- **Part-time college students are much more likely to work than full-time students, and they tend to work full-time.**

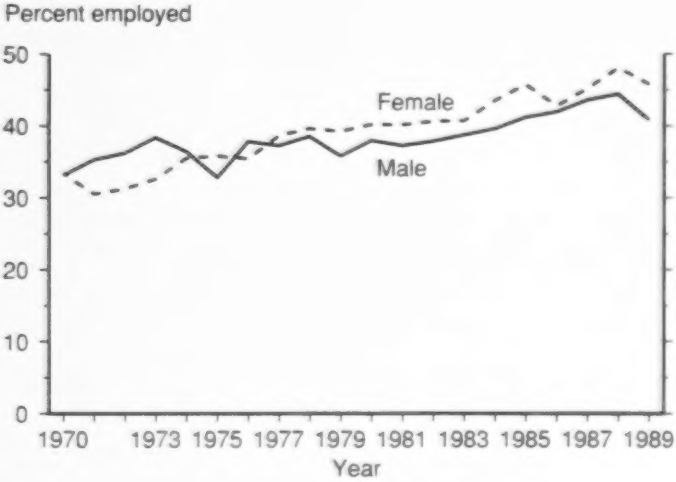
Percent of full-time college students, ages 16 to 24, who were employed, by sex and race: 1970–1989

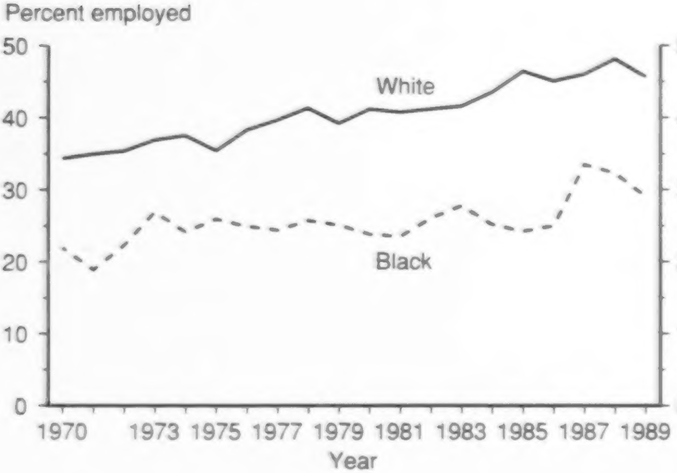
	Male employed		Female employed		White employed		Black employed	
Year	Total	Full time*	Total	Full time*	Total	Full time*	Total	Full time*
1970	33.1	5.7	33.4	2.4	34.3	4.6	22.0	2.1
1971	35.3	6.2	30.5	1.5	35.0	4.3	18.9	3.5
1972	36.2	6.5	31.2	1.8	35.4	4.3	22.3	6.0
1973	38.3	7.0	32.6	3.2	36.9	5.2	26.9	6.6
1974	36.4	6.6	35.5	3.6	37.5	5.4	24.2	4.4
1975	32.8	6.4	35.8	4.1	35.4	5.3	25.9	5.6
1976	37.8	6.0	35.4	3.5	38.3	4.3	24.9	7.2
1977	37.2	6.8	38.6	2.8	39.7	4.7	24.4	5.9
1978	38.5	6.8	39.6	4.0	41.3	5.6	25.7	5.2
1979	35.8	5.4	39.2	4.1	39.2	4.8	25.1	6.2
1980	37.9	5.0	40.2	3.7	41.2	4.3	23.8	5.8
1981	37.2	5.3	40.1	4.9	40.7	5.2	23.4	4.8
1982	37.8	4.1	40.7	3.4	41.1	3.6	26.0	5.1
1983	38.7	5.2	40.7	3.5	41.6	4.6	27.8	2.8
1984	39.6	6.2	43.5	3.9	43.5	5.1	25.2	4.8
1985	41.2	5.9	45.8	4.6	46.4	5.3	24.2	5.7
1986	41.9	5.1	42.8	4.8	45.1	5.1	25.0	5.0
1987	43.6	6.3	45.2	4.6	46.0	5.5	33.4	5.1
1988	44.4	6.6	48.1	5.2	48.2	6.3	32.3	5.0
1989	40.8	8.4	45.8	5.9	45.7	7.4	29.0	4.4

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Chart 2:25 **Percent of full-time college students, ages 16 to 24, who were employed, by sex and race: 1970–1989**





SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

III. Resources

I. Fiscal Characteristics

The 1980s presented many fiscal challenges to colleges and universities. Enrollment growth slowed, and it shifted toward part-time enrollment. After the high inflation years of the late 1970s, colleges found that their expenses had increased faster than their tuition charges. The federal budget deficit grew, which led to added scrutiny of all federal programs. In contrast, the 1980s started with a recession, but eventually was characterized by low inflation and moderate growth.

In this context, college and university expenditures grew and tuition levels grew even faster, particularly at privately controlled institutions. Total expenditures grew faster than GNP, so that by 1988 they accounted for 2.6 percent of GNP.

Indicator 2:26 Higher education revenues and expenditures as a percent of GNP

National spending on education is an investment in its human capital and adds to the wealth of the Nation. The fraction of GNP spent on education is a measure of how much the Nation saves from its annual product to invest in education.

- **During the 1960s, the fraction of GNP spent by higher education almost doubled from 1.4 to 2.6 percent.**
- **Since 1970, the percent of GNP accounted for by higher education has fluctuated, first declining moderately, then regaining the levels attained around 1970.**
- **From 1979 to 1988, spending by higher education as a percent of GNP increased moderately from 2.3 to 2.6 percent.**

Higher education revenues and expenditures as a percent of Gross National Product: Academic years ending 1960–1988 (selected years)

Year	Current-fund revenues/ GNP	Total expenditures/ GNP	Current-fund expenditures/ GNP
1960	—	1.4	—
1962	—	1.6	—
1964	—	1.8	—
1966	—	2.1	—
1968	—	2.4	—
1970	—	2.6	—
1972	—	2.6	2.2
1974	—	2.5	2.2
1976	2.2	2.6	2.3
1978	2.2	2.4	2.2
1980	2.2	2.4	2.2
1982	2.3	2.5	2.3
1984	2.3	2.5	2.3
1986	2.4	2.6	2.4
1987*	2.4	2.7	2.4
1988*	2.4	2.6	2.3

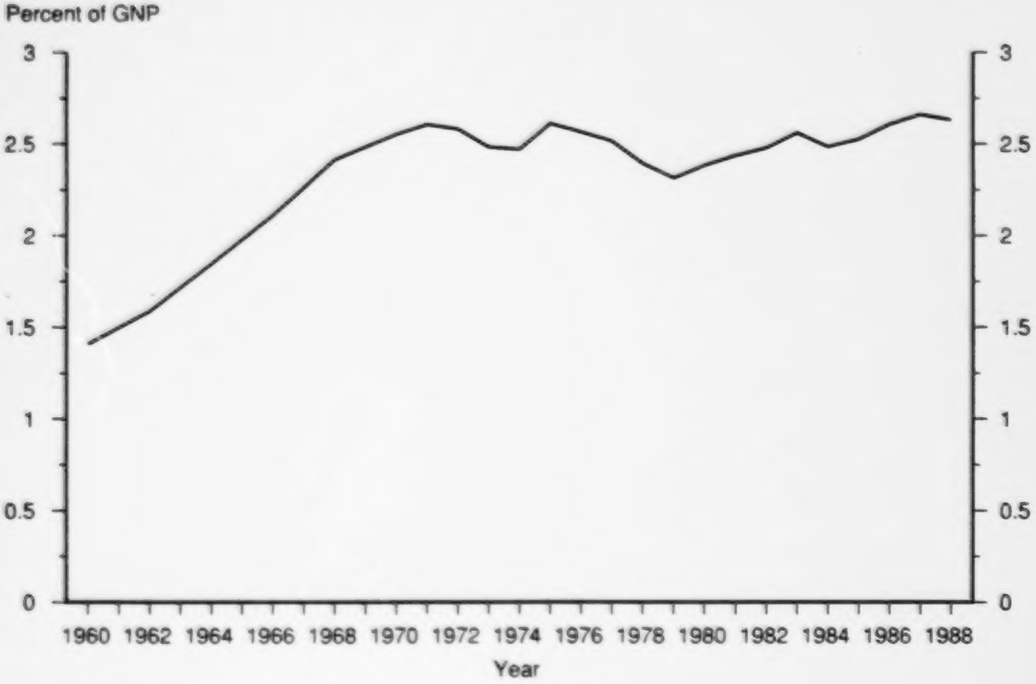
— Not available.

* Preliminary estimates.

NOTE: Total expenditures include current-fund expenditures and additions to plant value.

SOURCE: National Center for Education Statistics, *Digest of Education Statistics, 1989*, Tables 25, 269, 277 and *Early Estimates, National Estimates of Higher Education: School Year 1988–89*, December 1988.

Chart 2:26 Total expenditures by higher education institutions as a percent of gross national product: Academic years ending 1960–1988



SOURCE: National Center for Education Statistics, *Digest of Education Statistics*, 1989, Tables 25, 269, 277 and *Early Estimates, National Estimates of Higher Education: School Year 1988–89*, CS 89-315, December 1988.

Indicator 2:27 Higher education expenditures and tuition charges per student

Tuition represents both a major component of college costs to students and their families and a major source of revenues for colleges. As such, rising college tuition concerns families with children approaching college age. Rising tuition also concerns policymakers who must appropriate revenues for financial aid or regulate its distribution during a time of large budget deficits and college administrators who face rising faculty salaries and other costs. In addition, the high inflation rates of the 1970s, followed by the low inflation rates of the 1980s, made it difficult for college administrators to anticipate changes in costs and to set tuition levels appropriately.

- **At public institutions in 1981, tuition charges (in constant dollars) were 83 percent of their 1971 level, whereas expenditures were 96 percent. Between 1981 and 1984, tuition rose faster than expenditures, and both were comparable to their 1971 levels by 1984. Since 1984, both tuition and expenditures rose faster than inflation to a point 13-15 percent above their 1971 levels in 1988.**
- **At private institutions, tuition charges were 5 percent lower in 1981 than in 1971 while expenditures were 2 percent lower. Since 1981 both tuition and expenditures have risen much faster than inflation, particularly tuition. Tuition rose to 39 percent higher and expenditures 26 percent higher than 1971 levels (in constant dollars) by 1988.**

Indices of average undergraduate tuition charges and current expenditures per full-time-equivalent student, by control of institution: Academic years ending 1971–1988 (selected years)

(In constant 1989 dollars)

	Public		Private	
Year	Tuition charges	Expenditures[1]	Tuition charges	Expenditures[1]
		(1971=100)		
1971	100	100	100	100
1973	108	102	105	107
1975	94	100	96	101
1977	92	101	99	103
1978	93	101	99	102
1979	90	103	99	101
1980	85	100	95	100
1981	83	96	95	98
1982	87	94	100	97
1983	92	97	107	101
1984	99	99	112	105
1985	104	108	118	112
1986	109	114	125	117
1987[2]	112	116	134	124
1988[2]	113	115	139	126

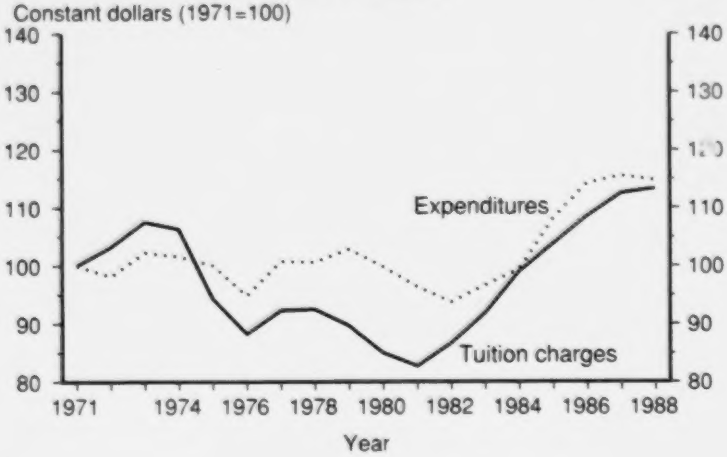
[1] Total current-fund expenditures.

[2] Preliminary estimates.

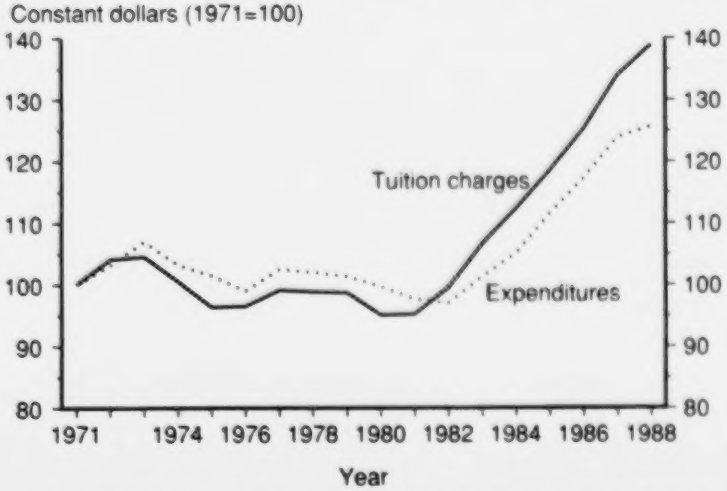
SOURCE: National Center for Education Statistics, *Digest of Education Statistics*, 1989, Tables 34, 162, 258, 277 and *Early Estimates, National Estimates of Higher Education: School Year 1988–89*, December 1988.

Chart 2:27 Indices in constant dollars of average undergraduate tuition charges at institutions of higher education and of current-fund expenditures per full-time-equivalent student: Academic years ending 1971–1988

Public institutions



Private institutions



SOURCE: National Center for Education Statistics, *Digest of Education Statistics*, 1989, Tables 34, 162, 258, 277 and *Early Estimates, National Estimates of Higher Education: School Year 1988–89*, CS 89-315, December 1988

J. Faculty Issues

The faculty of the Nation's colleges and universities are a vital national resource. They transmit knowledge to new generations of citizens and perform research important to our economic, social, and political life. An important question is the ability of higher education to attract and retain qualified people in academic careers.[1]

This question is particularly important today in view of the expected retirement of large numbers of faculty in a decade or so.[2] Many of today's faculty began their careers during the 1950s and 1960s when higher education was expanding very rapidly. These faculty will be approaching retirement age during the late 1990s and early 21st century. Whether these faculty will, in fact, retire is uncertain, of course. This is particularly true given that policies of mandatory retirement at age 70 are expected to disappear in 1994. If they do retire, there will be a great demand for new faculty.

Between 1970 and 1983, the number of faculty increased rapidly from 474,000 to 724,000. Based on enrollments, it is estimated that after 1983 the number of faculty first fell slightly and then rose somewhat.[3] As the growth of the faculty has slowed and the number of new PhDs has stayed relatively constant, the number of new PhDs taking jobs in colleges and universities has declined—from 11,537 in 1970 to a low of 6,745 in 1986, with a small upturn in 1988 to 6,952. Thus the average age of faculty continues to rise. The percent of faculty over 55 years old increased from 16 in 1977 to 22 in 1987. The percent over 55 is highest in the humanities, where it is 26 percent—the growth of the humanities occurred first as higher education expanded to accommodate the post-war boom. The second oldest faculties are those in the engineering and the physical sciences, where 25 and 24 percent, respectively, are over 55 years old. The growth here occurred during the post-Sputnik era. However, the greatest shortfall of faculty may occur not in these fields but in business and the social sciences, where enrollments are growing fastest.

While the number of new PhDs taking jobs in colleges and universities was decreasing during the 1970s, faculty salaries were also declining. Salaries, adjusted for inflation, fell through the 1970s and reached a low in the 1981. Since 1982, however, faculty salaries have been rising.

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[1] Bowen, Howard R., and Jack H. Schuster, *American Professors: A National Resource Imperiled*, New York: Oxford University Press, 1986.

[2] For a discussion of this issue, see: William G. Bowen and Julie Ann Sosa, *Prospects for Faculty in the Arts and Sciences: A Study of Factors Affecting Demand and Supply, 1987 to 2012*, Princeton University Press: Princeton, N.J., 1989.

[3] U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1989*, table 190.

Indicator 2:28 New doctorate recipients with jobs in higher education, by field

The infusion of new talent into a profession is important to its intellectual vitality and growth. Trend data on the proportion of newly educated doctoral recipients in different fields who take jobs in colleges and universities shed light on how higher education in general, and specific fields in particular, have fared in this area over time.

- **The proportion of new doctorate recipients with definite employment commitments[*] in the United States who took jobs in American colleges and universities declined between the early 1970s and early 1980s. Since then, the proportion taking such jobs has remained generally stable.**
- **The size and pattern of the declines varied depending upon the field of study. The largest drops in the 1970s and early 1980's occurred in the social and behavioral sciences and in education. Large declines also took place in the humanities, life sciences, and physical sciences. The proportion of new doctorate recipients in each of the five above-mentioned fields who took jobs in higher education was substantially lower in 1988 than it had been in 1970.**
- **The patterns in mathematics and engineering were different from those occurring in other fields. Although the proportions of new mathematics and engineering doctorate recipients taking jobs in higher education dropped some during the 1970s, the declines were smaller than in other fields. Also, by 1988, the proportions taking such jobs were about the same as or higher than they had been in 1970.**

Percent of new doctorate recipients with definite employment plans in the United States who had commitments at colleges and universities, by field of study: 1970–1988

Field of study	1970	1974	1978	1982	1986	1988
All fields	68	63	57	50	50	52
Humanities	96	91	85	83	81	83
Social and behavioral sciences	80	71	61	53	49	51
Natural sciences	57	53	46	40	39	41
Life sciences	68	62	58	53	49	48
Physical sciences	38	32	25	19	21	23
Mathematics	80	77	71	75	77	81
Engineering	29	21	26	26	33	33
Education	71	58	53	46	45	44
Other technical/professional	81	78	73	68	72	74

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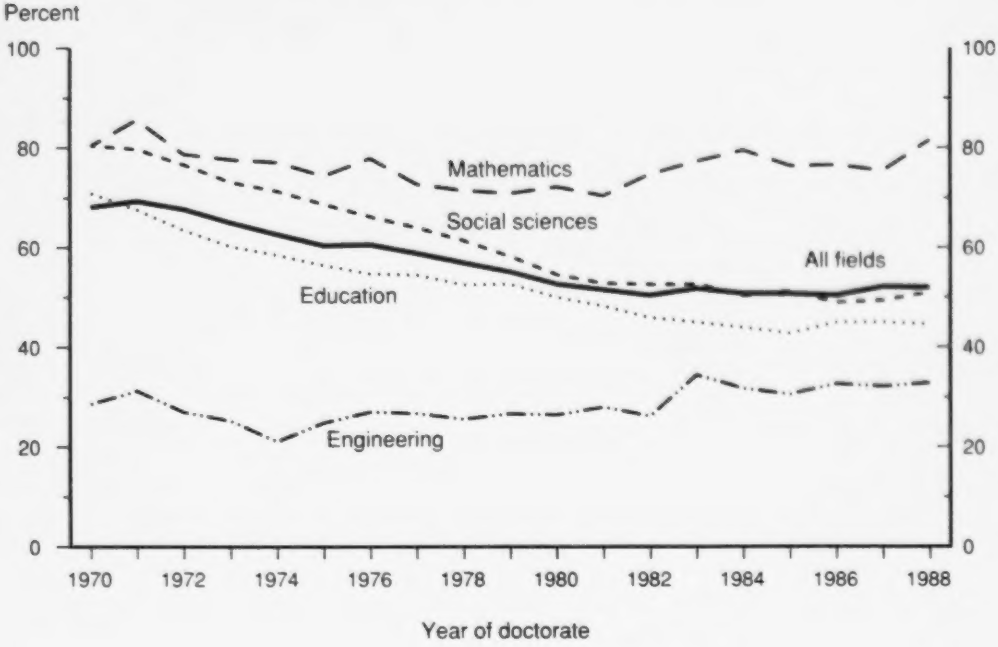
[*] A "definite commitment" is defined as a signed contract, acceptance of a formal offer, etc. This indicator pertains only to employment commitments in the United States. Jobs in higher education include those in teaching, research, administration, and other areas but not postdoctoral fellowships.

SOURCE: National Research Council, Doctorate Records File, Survey of Earned Doctorates, unpublished tabulations.

Chart 2:28 **Percent of new doctorates with definite employment plans in the United States who had commitments at colleges and universities, by field of study: 1970–1988**



SOURCE: National Research Council, Doctorate Records File, Survey of Earned Doctorates, unpublished tabulations.

Indicator 2:29 Age of doctorate holders employed in colleges and universities

Changes in the proportion of academically employed doctorate holders aged 55 or older provide evidence of the aging of the academic labor force and can alert policymakers and adminstrators to problems that might result. One issue is whether faculty shortages would occur in the event of large numbers of retirements.

- **From 1977 to 1987, the proportion of doctorate holders employed in 4-year colleges and universities[1] (academically-employed) who were 55 or older rose from 16 to 22 percent. The proportion under 40 dropped from 43 to 26 percent.**
- **The proportion of academically employed doctorate holders 55 or older grew significantly throughout the period in all fields except the computer sciences. The increases were greatest in the physical sciences, mathematics, and engineering. In 1987, the highest proportions of older doctorate holders were in the humanities (26 percent), engineering (25 percent), and the physical sciences (24 percent).**
- **In 1987, in all fields except the computer sciences, the proportion of doctorate holders 55 or older was higher among those employed in academic settings than among those with nonacademic jobs. This was a change from 10 years earlier when there were no significant age differences between the two employed groups, except among engineers.[2]**

Percent of doctorate holders aged 55 or older, by type of employer and field of study

Type of employer and field	1977	1979	1981	1983	1985	1987
4-year colleges and universities						
Total	16	17	19	21	22	22
Humanities	20	20	21	23	24	26
Social and behavioral sciences	17	18	20	22	22	22
Life sciences	15	16	17	19	19	20
Physical sciences	14	17	19	20	22	24
Mathematics	11	13	14	16	18	19
Computer sciences	6	9	13	14	12	13
Engineering	14	16	20	20	23	25
Other employers	14	15	16	16	17	16

NOTE: Data pertain to doctorate holders in the humanities, sciences, and engineering.

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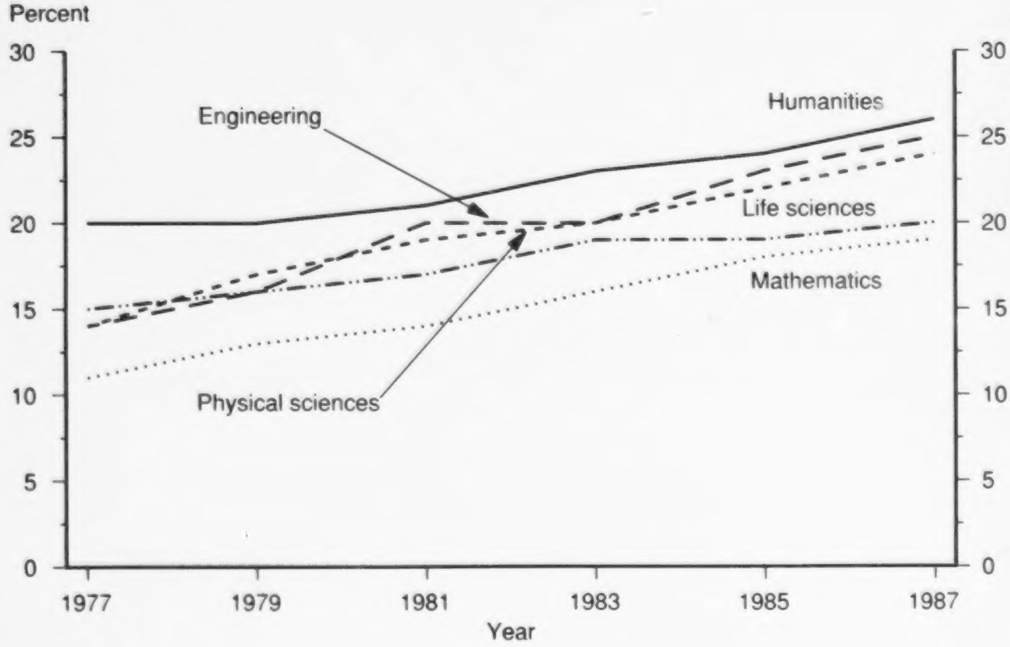
[1] This indicator covers U.S.-employed doctorate holders in the humanities, sciences, and engineering. In 1987, 54 percent of all these doctorates and 97 percent of those employed in postsecondary education were in 4-year institutions.

[2] These findings may partially reflect declines in the proportion of new doctorates taking jobs in colleges and universities upon receiving their degrees. See indicator 2:28 for details.

SOURCE: National Research Council, Survey of Doctorate Recipients, various years.

Chart 2:29 Percent of doctorate holders employed in 4-year colleges and universities who were age 55 or older: 1977–1987



SOURCE: National Research Council, Survey of Doctorate Recipients, various years.

Indicator 2:30 Salaries of full-time faculty, by academic rank and department program area

College faculty salaries are of interest for two reasons. First, they affect higher education's ability to attract and retain qualified instructional personnel. Second, they are a significant component of college and university expenditures.

- **After adjusting for inflation, the salaries of full-time assistant, associate, and full professors fell substantially between 1973 and 1981 but rose through the mid- and late-1980s.**
- **Despite increases during most of the 1980s, by 1988 the purchasing power of salaries at the professorial ranks remained below their mid-1970s levels.**
- **The salaries of full-time faculty in 4-year institutions differ by department program area. They are highest within the health sciences and engineering and lowest in education, the fine arts, and the humanities.**

Average salaries of full-time faculty, by academic rank: Selected years 1973–1988

(Constant 1989 dollars)

Rank	1973	1976	1979	1982	1985	1988
Full professor	$56,967	$51,831	$49,126	$45,308	$47,770	$51,630
Associate professor	43,276	39,030	37,205	34,210	35,993	38,665
Assistant professor	35,724	32,016	30,389	27,866	29,651	31,945

Average salaries of regular full-time faculty in 4-year institutions, by department program area: Fall 1987

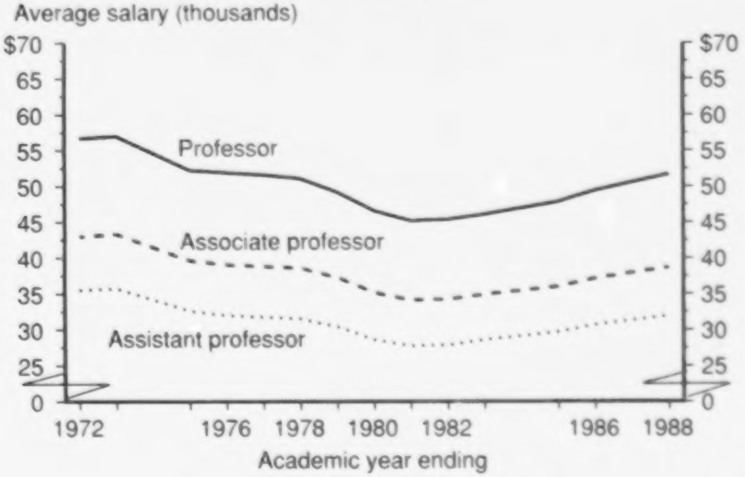
(Constant 1989 dollars)

Program area	Salary	Program area	Salary
Agriculture/home economics	$44,805	Health sciences	$61,817
Business	43,179	Humanities	38,250
Education	37,724	Natural sciences	44,168
Engineering	49,810	Social sciences	40,835
Fine arts	36,802		

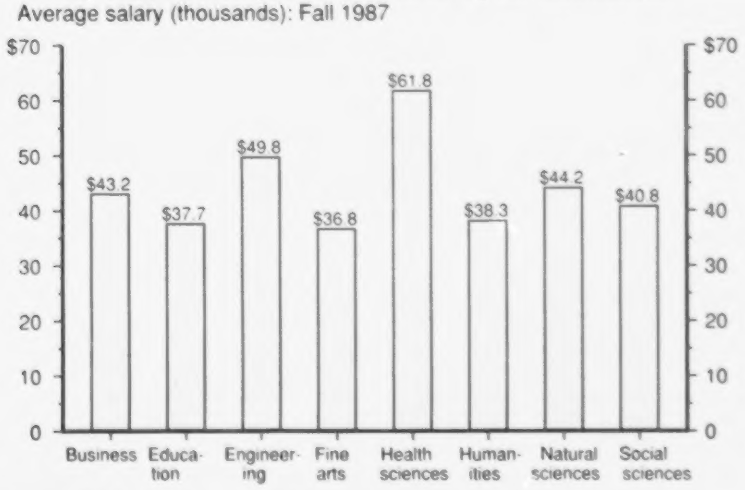
SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of faculty salaries, various years, and 1988 National Survey of Postsecondary Faculty.

Chart 2:30 Average full-time faculty salaries in 1989 dollars

By academic rank



By department program area in 4-year institutions



NOTE: Data by academic rank not available for 1974, 1984, and 1987.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of faculty salaries, various years and 1988 National Survey of Postsecondary Faculty.

A. Supplemental Tables and Notes

Table 2:1-1 Percent enrolling in college in October following high school graduation: 1968–1987 (3-year averages)

		Male			Female			Race/ethnicity		
Year[1]	Total	Total[2]	2-year	4-year	Total[2]	2-year	4-year	White	Black[3]	Hispanic[4]
1968	53.6	60.3	—	—	47.8	—	—	55.0	42.3	—
1969	53.5	59.3	—	—	48.2	—	—	54.6	44.3	—
1970	52.9	57.6	—	—	48.5	—	—	53.9	44.6	—
1971	51.4	55.1	—	—	48.0	—	—	51.9	47.7	—
1972	49.7	53.4	—	—	46.3	—	—	50.5	42.8	—
1973	47.8	50.7	—	—	45.0	—	—	48.2	44.3	—
1974	48.3	50.7	—	—	46.1	—	—	48.8	43.8	—
1975	49.0	49.8	—	—	48.3	—	—	49.1	47.9	—
1976	50.1	50.8	16.4	32.7	49.5	16.7	31.0	50.3	47.6	—
1977	49.9	50.3	15.3	33.3	49.6	17.0	30.8	49.9	47.9	40.4
1978	50.0	51.3	16.1	33.5	49.0	17.5	29.8	50.1	47.5	—
1979	49.6	49.5	16.0	31.7	49.7	18.7	29.4	49.9	45.0	—
1980	50.9	50.7	17.9	31.5	51.0	19.3	30.0	51.3	43.8	—
1981	51.3	50.2	18.1	30.9	52.3	20.4	30.7	52.2	40.6	—
1982	52.4	51.9	19.1	31.6	52.9	19.4	32.2	53.9	39.2	49.3
1983	52.8	52.2	18.5	31.8	53.3	20.0	32.2	54.9	38.5	46.7
1984	55.1	55.4	19.3	34.0	54.8	19.6	33.8	57.4	40.2	49.4
1985	55.5	56.8	19.8	35.1	54.4	19.2	33.8	57.8	39.6	46.3
1986	56.1	57.6	19.3	37.5	54.6	18.8	34.9	57.3	43.3	42.4
1987	56.5	57.1	19.9	36.9	55.9	19.8	35.6	57.7	44.1	45.0

— Not available

[1] Three-year averages. For example, the 3-year average percentage for 1987 reported in this table is the average of the percentages for 1986, 1987, and 1988 reported in table 2:1-2.

[2] Total equals the sum of those enrolled in 2-year, 4-year, and those not reporting the type of college.

[3] Nonwhite until 1976, black thereafter.

[4] Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . . ," various years, based on the October supplement to the Current Population Survey, and unpublished tabulations of the Bureau of Labor Statistics based on the same survey.

Table 2:1-2 Percent enrolling in college in October following high school graduation: 1967–1988

		Male			Female			Race/ethnicity		
Year	Total	Total[1]	2-year	4-year	Total[1]	2-year	4-year	White	Black[2]	Hispanic[3]
1967	51.9	57.6	—	—	47.2	—	—	53.1	42.3	—
1968	55.4	63.2	—	—	48.9	—	—	56.6	46.2	—
1969	53.3	60.1	—	—	47.2	—	—	55.2	38.5	—
1970	51.8	55.2	—	—	48.5	—	—	52.2	48.3	—
1971	53.5	57.5	—	—	49.7	—	—	54.2	47.3	—
1972	49.2	52.8	—	—	45.9	—	—	49.4	47.4	—
1973	46.6	50.1	—	—	43.4	—	—	48.1	34.7	—
1974	47.6	49.4	—	—	45.8	—	—	47.1	50.5	—
1975	50.7	52.6	18.3	32.3	48.9	16.8	30.5	51.2	45.6	—
1976	48.8	47.4	14.1	31.7	50.3	16.1	32.4	48.9	47.5	52.6
1977	50.6	52.2	16.8	34.0	49.2	17.2	30.1	50.7	50.0	35.0
1978	50.1	51.1	15.0	34.2	49.3	17.6	30.0	50.1	46.3	29.0
1979	49.4	50.5	16.4	32.4	48.4	17.6	29.1	49.6	46.0	—
1980	49.4	46.9	16.7	28.8	51.7	21.2	29.1	49.9	42.6	—
1981	53.9	54.8	20.6	33.3	53.1	19.4	31.9	54.6	42.9	52.1
1982	50.6	49.0	17.2	30.7	52.1	20.6	31.0	52.0	36.5	43.1
1983	52.7	51.9	19.6	30.8	53.4	18.3	33.7	55.0	38.5	54.3
1984	55.2	56.0	19.0	33.9	54.5	21.2	31.9	57.9	40.2	44.3
1985	57.7	58.6	19.4	37.7	56.9	19.3	36.1	59.4	42.3	51.1
1986	53.8	55.9	21.0	33.9	51.9	16.9	33.7	56.0	36.5	44.4
1987	56.8	58.4	17.3	41.0	55.3	20.3	35.0	56.6	51.9	33.5
1988	58.9	57.1	21.3	35.8	60.7	22.4	38.3	60.7	44.9	57.0

— Not available

[1] Total equals the sum of those enrolled in 2-year, 4-year, and those not reporting the type of college.

[2] Nonwhite until 1976, black thereafter.

[3] Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey, and unpublished tabulations of the Bureau of Labor Statistics based on the same survey.

Table 2:1-3 Standard errors for estimated percentages in table 2:1-1

		Male			Female			Race/ethnicity		
Year[1]	Total	Total[2]	2-year	4-year	Total[2]	2-year	4-year	White	Black[3]	Hispanic[4]
1968	0.8	1.1	—	—	1.1	—	—	0.8	2.5	—
1969	0.8	1.1	—	—	1.1	—	—	0.8	2.5	—
1970	0.8	1.1	—	—	1.1	—	—	0.8	2.5	—
1971	0.8	1.1	—	—	1.1	—	—	0.8	2.5	—
1972	0.8	1.1	—	—	1.0	—	—	0.8	2.4	—
1973	0.7	1.1	—	—	1.0	—	—	0.8	2.3	—
1974	0.7	1.1	—	—	1.0	—	—	0.8	2.3	—
1975	0.7	1.1	—	—	1.0	—	—	0.8	2.3	—
1976	0.7	1.1	0.8	1.0	1.0	0.8	1.0	0.8	2.3	—
1977	0.7	1.1	0.8	1.0	1.0	0.8	1.0	0.8	2.3	4.9
1978	0.7	1.1	0.8	1.0	1.0	0.8	0.9	0.8	2.3	—
1979	0.7	1.1	0.8	1.0	1.0	0.8	0.9	0.8	2.3	—
1980	0.8	1.1	0.9	1.1	1.1	0.9	1.0	0.8	2.5	—
1981	0.8	1.1	0.9	1.1	1.1	0.9	1.0	0.8	2.4	—
1982	0.8	1.1	0.9	1.1	1.1	0.9	1.0	0.9	2.3	4.6
1983	0.8	1.2	0.9	1.1	1.1	0.9	1.0	0.9	2.3	4.5
1984	0.8	1.2	1.0	1.2	1.1	0.9	1.1	0.9	2.3	4.5
1985	0.8	1.2	1.0	1.2	1.1	0.9	1.1	0.9	2.3	4.6
1986	0.6	1.2	1.0	1.2	1.2	0.9	1.1	0.9	2.5	4.3
1987	0.8	1.2	1.0	1.2	1.2	0.9	1.1	0.9	2.4	4.3

— Not available

[1] Standard errors for three-year averages. For example, the standard error for the 3-year average percentage for 1987 reported in table 2:2-1 is based on the combined sample size for 1986, 1987, and 1988 of the denominators for the percentages in table 2:2-2.

[2] Total equals the sum of those enrolled in 2-year, 4-year, and those not reporting the type of college.

[3] Nonwhite until 1976, black thereafter.

[4] Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey, and unpublished tabulations of the Bureau of Labor Statistics based on the same survey.

Indicator 2:1

Table 2:1-4 Standard errors of estimated percentages in table 2:1-2

Year	Total	Male			Female			Race/ethnicity		
		Total[1]	2-year	4-year	Total[1]	2-year	4-year	White	Black[2]	Hispanic[3]
1967	1.4	2.1	—	—	1.9	—	—	1.5	4.6	—
1968	1.4	2.0	—	—	1.9	—	—	1.5	4.3	—
1969	1.3	1.9	—	—	1.8	—	—	1.4	4.2	—
1970	1.3	1.9	—	—	1.9	—	—	1.4	4.4	—
1971	1.3	1.9	—	—	1.8	—	—	1.4	4.5	—
1972	1.3	1.9	—	—	1.8	—	—	1.4	4.0	—
1973	1.3	1.9	—	—	1.8	—	—	1.4	3.8	—
1974	1.3	1.8	—	—	1.8	—	—	1.4	3.9	—
1975	1.3	1.8	1.4	1.7	1.7	1.3	1.3	1.3	3.9	—
1976	1.3	1.9	1.3	1.8	1.8	1.4	1.3	1.4	4.0	6.1
1977	1.3	1.8	1.4	1.8	1.7	1.3	1.3	1.3	4.1	6.6
1978	1.3	1.8	1.3	1.8	1.7	1.3	1.3	1.4	4.0	6.6
1979	1.3	1.8	1.4	1.7	1.7	1.3	1.2	1.3	4.1	—
1980	1.4	1.9	1.5	1.8	1.9	1.6	1.4	1.5	4.2	—
1981	1.4	2.0	1.6	1.9	1.9	1.6	1.4	1.5	4.2	6.7
1982	1.4	2.0	1.5	1.8	1.9	1.5	1.4	1.5	4.0	6.1
1983	1.4	2.0	1.6	1.9	1.9	1.5	1.5	1.5	4.0	6.8
1984	1.4	2.0	1.6	2.0	1.9	1.6	1.4	1.5	3.8	5.9
1985	1.5	2.1	1.7	2.1	2.0	1.6	1.6	1.6	4.4	6.8
1986	1.4	2.1	1.7	2.0	2.0	1.5	1.5	1.6	4.0	6.2
1987	1.5	2.1	1.6	2.1	2.0	1.7	1.6	1.6	4.4	5.7
1988	1.4	2.1	1.7	2.0	2.0	1.7	1.6	1.6	4.1	6.0

— Not available

[1] Total equals the sum of those enrolled in 2-year, 4-year, and those not reporting the type of college.

[2] Nonwhite until 1976, black thereafter.

[3] Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey, and unpublished tabulations of the Bureau of Labor Statistics based on the same survey.

Indicator 2:2

Table 2:2-1 Percent of high school graduates 16-24 and 25-34 years old enrolled in 2-year and 4-year colleges: 1973–1988

	16- to 24-year-olds			25- to 34-year-olds		
Year	Total	2-year	4-year	Total	2-year	4-year
			Male graduates			
1973	32.7	7.9	23.8	6.4	2.5	3.7
1974	33.1	8.5	23.3	7.3	3.1	3.8
1975	33.2	9.4	23.8	8.2	4.2	3.9
1976	32.9	8.6	24.4	7.4	3.5	3.8
1977	32.9	8.6	24.2	6.9	3.1	3.8
1978	31.6	8.3	23.4	5.9	2.8	3.2
1979	31.1	7.8	23.3	5.4	2.2	3.3
1980	32.1	8.7	22.4	5.2	2.0	2.8
1981	33.4	9.3	23.1	5.7	2.2	3.2
1982	33.4	9.2	23.0	5.4	2.3	2.8
1983	33.8	9.2	23.3	5.8	2.6	3.0
1984	34.6	9.2	24.2	5.3	2.2	2.8
1985	34.4	8.5	24.5	5.1	1.9	3.1
1986	34.2	9.3	24.1	5.3	2.2	3.0
1987	37.3	10.2	27.2	5.0	2.1	2.9
1988	36.9	11.0	25.9	4.9	1.9	3.1
			Female graduates			
1973	24.5	5.6	18.1	3.3	1.7	1.5
1974	25.9	6.2	18.6	4.0	1.9	1.9
1975	28.2	7.9	19.0	5.4	2.2	2.3
1976	29.8	7.6	21.2	4.5	2.4	2.0
1977	28.4	7.7	19.3	5.6	2.7	2.5
1978	27.9	7.9	18.9	5.1	2.2	2.6
1979	28.8	7.9	20.0	5.4	2.6	2.6
1980	29.3	8.6	19.5	5.8	2.9	2.5
1981	29.7	9.1	19.4	6.0	2.7	2.9
1982	30.7	9.7	20.1	5.6	2.8	2.5
1983	29.6	9.0	19.5	5.7	2.8	2.7
1984	29.9	8.3	20.3	5.7	2.5	2.9
1985	31.4	9.0	21.2	6.0	3.1	2.7
1986	31.5	9.0	21.6	5.8	2.9	2.8
1987	33.4	10.7	22.7	5.5	2.7	2.8
1988	35.4	11.2	24.3	5.6	3.1	2.5

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Indicator 2:2

Table 2:2-2 Standard errors for estimated percentages in table 2:2-1

Year	16- to 24-year-olds			25- to 34-year-olds		
	Total	2-year	4-year	Total	2-year	4-year
			Male graduates			
1973	0.7	0.4	0.6	0.4	0.2	0.3
1974	0.7	0.4	0.6	0.4	0.2	0.3
1975	0.7	0.4	0.6	0.4	0.3	0.3
1976	0.7	0.4	0.6	0.4	0.3	0.3
1977	0.7	0.4	0.6	0.4	0.2	0.3
1978	0.6	0.4	0.6	0.3	0.2	0.2
1979	0.6	0.4	0.6	0.3	0.2	0.2
1980	0.6	0.4	0.6	0.3	0.2	0.2
1981	0.6	0.4	0.6	0.3	0.2	0.2
1982	0.6	0.4	0.6	0.3	0.2	0.2
1984	0.7	0.4	0.6	0.3	0.2	0.2
1985	0.7	0.4	0.6	0.3	0.2	0.2
1986	0.7	0.4	0.6	0.3	0.2	0.2
1987	0.7	0.4	0.6	0.3	0.2	0.2
1988	0.7	0.5	0.6	0.3	0.2	0.2
			Female graduates			
1973	0.6	0.3	0.6	0.3	0.2	0.2
1974	0.6	0.3	0.6	0.3	0.2	0.2
1975	0.6	0.4	0.6	0.3	0.2	0.2
1977	0.6	0.4	0.6	0.3	0.2	0.2
1978	0.6	0.4	0.5	0.3	0.2	0.2
1979	0.6	0.4	0.6	0.3	0.2	0.2
1980	0.6	0.4	0.5	0.3	0.2	0.2
1981	0.6	0.4	0.5	0.3	0.2	0.2
1982	0.6	0.4	0.5	0.3	0.2	0.2
1983	0.6	0.4	0.5	0.3	0.2	0.2
1984	0.6	0.4	0.6	0.3	0.2	0.2
1985	0.6	0.4	0.6	0.3	0.2	0.2
1986	0.7	0.4	0.6	0.3	0.2	0.2
1987	0.7	0.4	0.6	0.3	0.2	0.2
1988	0.7	0.5	0.6	0.3	0.2	0.2

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Indicator 2:3

Table 2:3-1 Standard errors for estimated percentages in text table for indicator 2:3

	High school graduates 16-24 years old				High school graduates 25-34 years old			
	White		Black		White		Black	
Year	Male	Female	Male	Female	Male	Female	Male	Female
1971	0.8	0.7	2.6	2.0	0.5	0.3	1.8	1.0
1972	0.8	0.7	2.4	1.9	0.5	0.3	1.6	1.3
1973	0.7	0.6	2.2	1.8	0.4	0.3	1.5	1.1
1974	0.7	0.6	2.3	1.9	0.4	0.3	1.7	1.2
1975	0.7	0.6	2.3	2.0	0.4	0.3	1.6	1.3
1976	0.7	0.7	2.3	1.9	0.4	0.3	1.6	1.2
1977	0.7	0.6	2.2	1.9	0.4	0.4	1.6	1.4
1978	0.7	0.6	2.2	1.8	0.4	0.3	1.4	1.2
1979	0.7	0.6	2.2	1.8	0.4	0.4	1.2	1.1
1980	0.7	0.7	2.2	1.9	0.4	0.4	1.4	1.1
1981	0.7	0.7	2.1	1.9	0.4	0.4	1.3	1.1
1982	0.7	0.7	1.9	1.7	0.4	0.4	0.9	0.9
1983	0.7	0.7	2.1	1.8	0.4	0.4	1.2	1.0
1984	0.8	0.7	2.0	1.8	0.3	0.3	1.1	0.9
1985	0.8	0.7	2.0	1.8	0.3	0.3	0.9	1.0
1986	0.8	0.7	2.1	1.8	0.3	0.3	1.0	0.9
1987	0.8	0.8	2.2	1.9	0.4	0.4	1.1	1.0
1988	0.8	0.8	2.0	1.9	0.4	0.4	0.9	1.0

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Indicator 2:4

Table 2:4-1 Tuition, room, and board as a percent of income of families with children under 18, all 6-17 years old, at selected family income percentiles, by control of institution: 1975–1987

	Public institutions				Private institutions			
Year	20th	25th	50th	75th	20th	25th	50th	75th
1975	19.8	16.9	10.5	7.5	43.5	37.2	23.2	16.4
1976	19.6	16.8	10.3	7.4	42.7	36.7	22.5	16.1
1977	19.7	16.8	10.2	7.2	43.3	37.[illegible]	22.4	15.9
1978	19.1	16.3	9.9	7.1	43.2	37.0	22.3	16.2
1979	18.9	16.2	9.7	6.8	42.9	36.7	22.1	15.4
1980	20.2	17.1	10.1	6.9	46.5	39.5	23.2	15.9
1981	21.9	18.4	10.6	7.2	50.8	42.6	24.5	16.8
1982	24.1	19.8	11.2	7.6	56.6	46.6	26.4	17.8
1983	25.3	20.8	11.7	7.7	60.1	49.5	27.9	18.3
1984	25.2	20.8	11.9	7.8	60.6	50.2	28.7	18.8
1985	24.5	20.6	11.7	7.8	60.6	51.0	28.8	19.3
1986	26.6	22.0	12.3	8.0	67.0	55.4	30.9	20.3
1987	26.4	22.0	12.0	7.9	68.7	57.1	31.3	20.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1989, Table 258. U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . .," various years, based on March supplement to the Current Population Survey.

Table 2:4-2 Tuition, room, and board as a percent of the income of all families at selected family income percentiles, by control of institution: 1964–1987

	Public institutions			Private institutions		
Year	20th	50th	80th	20th	50th	80th
1964	29.0	14.4	9.2	58.2	28.8	18.6
1965	27.7	13.9	9.0	56.6	28.5	18.3
1966	25.7	13.4	8.7	53.1	27.8	18.0
1967	25.5	13.2	8.5	52.9	27.3	17.6
1968	24.4	12.8	8.3	50.7	26.7	17.2
1969	23.8	12.6	8.1	50.1	26.5	17.0
1970	24.6	12.7	8.1	52.4	27.1	17.2
1971	25.7	13.0	8.3	55.3	28.0	17.8
1972	25.4	12.8	8.0	52.9	26.7	16.7
1973	23.8	12.0	7.5	49.5	25.0	15.6
1974	22.4	11.5	7.2	48.9	25.1	15.7
1975	23.4	11.8	7.3	51.4	25.9	16.1
1976	23.3	11.6	7.2	50.9	25.3	15.8
1977	23.1	11.4	7.0	50.9	25.1	15.5
1978	21.8	10.8	6.6	49.3	24.4	15.0
1979	20.7	10.3	6.4	46.9	23.5	14.6
1980	21.9	10.7	6.5	50.6	24.7	15.1
1981	23.6	11.5	6.9	54.7	26.7	15.9
1982	25.8	12.4	7.2	60.7	29.0	17.0
1983	26.4	12.5	7.4	62.9	29.8	17.5
1984	26.8	12.7	7.4	64.5	30.5	17.8
1985	26.9	12.8	7.4	66.5	31.6	18.3
1986	27.5	13.0	7.6	69.3	32.7	19.1
1987	27.3	12.8	7.5	71.1	33.3	19.4

NOTE: Tuition data are for academic years beginning 1964–1987 and family income data are for calendar years 1964–1987.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics*, 1989, Table 258. U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . .," various years, based on March supplement to the Current Population Survey.

Indicator 2:5

Table 2:5-1 Percent of college students enrolled the previous October who were again enrolled the following October, by previous October's level: 1971–1986

Year	High school	Freshman	Sophomore	Junior	Senior
1971	53.7	75.6	72.8	89.0	94.9
1972	50.0	73.5	70.6	87.5	93.0
1973	47.1	70.5	71.0	86.3	92.5
1974	47.8	71.0	70.5	87.4	91.6
1975	52.4	75.6	71.4	88.4	93.5
1976	50.2	76.7	71.8	86.6	93.0
1977	50.9	73.5	71.8	88.2	93.7
1978	52.0	73.7	70.9	86.7	91.4
1979	51.0	73.9	70.3	87.4	92.9
1980	51.4	77.2	73.1	86.9	92.3
1981	55.2	77.0	72.8	87.1	91.7
1982	52.9	77.1	75.5	89.9	94.7
1983	53.9	77.5	74.1	88.3	92.3
1984	57.8	78.4	75.0	87.6	93.5
1985	58.2	79.5	76.5	88.5	92.8
1986	57.0	79.5	73.8	87.9	94.1

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Table 2:5-2 Standard errors for the estimated percentages in table 2:5-1

Year	High school	Freshman	Sophomore	Junior	Senior
1971	1.3	1.4	1.7	1.4	1.2
1972	1.3	1.5	1.7	1.4	1.3
1973	1.3	1.6	1.7	1.5	1.3
1974	1.3	1.5	1.8	1.5	1.4
1975	1.2	1.4	1.7	1.4	1.2
1976	1.3	1.3	1.6	1.5	1.2
1977	1.2	1.4	1.7	1.4	1.2
1978	1.3	1.4	1.7	1.5	1.5
1979	1.2	1.4	1.7	1.4	1.3
1980	1.3	1.3	1.6	1.4	1.3
1981	1.4	1.5	1.8	1.6	1.5
1982	1.4	1.4	1.7	1.4	1.2
1983	1.4	1.4	1.7	1.4	1.4
1984	1.4	1.5	1.6	1.5	1.3
1985	1.4	1.4	1.6	1.4	1.3
1986	1.4	1.4	1.7	1.5	1.2

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," various years.

Supplemental note 2:5 Persistence rates

The college student persistence rate is defined as the proportion of students enrolled the previous October who were enrolled in college again the following October. Calculating this rate requires distinguishing students who were enrolled in high school, college as undergraduates, and college as graduate students. The basis for distinguishing these groups is educational attainment. However, the October Current Population Survey (CPS) reports only *current* educational attainment, so educational attainment for the previous October must be inferred.

Educational attainment in the CPS is reported as "years of schooling completed." Individuals with 12 years of schooling completed are regarded as high school graduates, 16 years completed as college graduates, and so on. Years of schooling completed is based on the responses to two questions: 1) "What is the highest grade . . . ever attended?", and 2) "Did . . . complete it?" For example, an individual who responds that the highest grade he ever attended was first year of college and that he did not complete it, is regarded as having completed 12 years of schooling.

For the purpose of calculating the persistence rate, two assumption are made. First, respondents who were enrolled the previous October are assumed to have *then* reached their highest grade attended if they were not enrolled again the following October. This assumption would overstate the level for those who made the transition to the next level in mid-year. Second, respondents who were enrolled in October are assumed to have been in the highest year *completed* the previous October. This would understate the level for those who attended part time and had not made the transition to the next level during the previous year.

Consider three examples. First, those who were enrolled in the previous October, but not in the following October, and whose highest grade *attended* is 13 are assumed to have been freshmen in the previous October. Second, those who were enrolled in the previous October as well as the following October, and whose highest grade *completed* is 13 years of schooling, are assumed to have been freshmen in the previous October. Third, those who were enrolled in the previous October, but not in the following October, and whose highest grade *completed* is 16 years of schooling, are assumed to have been seniors in the previous October. Some students may be misclassified, but if the extent of misclassification is not very different across groups or over time, then differences between groups and changes over time are useful, although the inferred level may be high or low.

Highest grade attended, although available on the October CPS public-use micro-data files, is not reported in Census or Bureau of Labor Statistics publications. Based on the October 1988 micro-data files, we have calculated among respondents enrolled in October 1987 but not in October 1988 the proportion, at each level of years of schooling completed, who did complete the highest grade they ever attended. These calculations are reported in the table below.

These rates allows us to infer, for example, what proportion of students who (1) had completed 12 years of schooling, and (2) were enrolled the previous but not the following October, were college freshman the previos year but did not complete it, as opposed to high school seniors who did.

These rates for 1988, reported in the right-most column of the table below, are then applied to the numbers in published Census series P-20 reports for all years. For example, from the table 84.9 percent of those who have completed 12 years of schooling had completed the highest grade they ever attended—high school senior. The remaining 15.1 percent did not complete the highest grade they ever attended—first year of college. We make use of this by assuming that in each year 15.1 percent of those enrolled the previous but not the following October and who have completed 12 years of schooling were freshman in the previous October. Only the rates for 12 through 16 years of schooling completed are used. The rates for 9 through 11 years of schooling completed are presented for comparison purposes only. Generally, high school dropouts are much less likely than college students to have completed the highest grade attended (i.e. to have dropped out during a grade rather than after completing it).

Responses to the educational attainment questions among those enrolled in October 1987 but not in October 1988 in the October 1988 CPS

Highest grade attended	Highest grade completed?	Years of schooling completed	Number	Percent of attainment group completing highest grade attended
9	Yes	9	36,012	32.0
10	No	9	76,371	
10	Yes	10	46,428	28.8
11	No	10	114,748	
11	Yes	11	50,691	26.9
12	No	11	137,611	
12	Yes	12	1,262,254	84.9
13	No	12	225,290	
13	Yes	13	204,658	56.1
14	No	13	159,974	
14	Yes	14	209,658	77.1
15	No	14	62,349	
15	Yes	15	59,271	49.8
16	No	15	59,794	
16	Yes	16	573,566	95.4
17+	No	16	27,505	

SOURCE: Unpublished tabulation based on the October 1988 supplement to the Current Population Survey.

Indicator 2:6

Table 2:6-1 Average percent of college students enrolled the previous October who are enrolled again the following October: 1971–1986

Year	White	Black	Hispanic*
1971	80.4	84.1	—
1972	78.5	71.2	69.5
1973	77.3	74.7	75.7
1974	77.6	71.2	73.9
1975	79.8	73.6	73.9
1976	79.8	78.8	77.7
1977	79.1	77.2	75.0
1978	78.1	73.9	76.4
1979	78.6	73.8	71.2
1980	80.3	70.1	72.0
1981	80.2	73.9	71.8
1982	81.9	73.7	78.1
1983	81.0	71.4	76.3
1984	81.7	73.1	76.9
1985	82.6	71.6	76.1
1986	81.9	72.7	79.7

— Not available.

* Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," and unpublished tabulations based on the October 1988 CPS public-use micro-data file.

Table 2:6-2 Standard errors for estimated percentages in table 2:6-1

Year	White	Black	Hispanic*
1971	0.8	2.6	—
1972	0.8	3.2	5.6
1973	0.8	2.9	4.9
1974	0.8	3.2	4.4
1975	0.8	2.8	4.6
1976	0.8	2.5	4.2
1977	0.8	2.7	4.6
1978	0.8	2.7	4.4
1979	0.8	2.7	4.5
1980	0.8	2.8	4.3
1981	0.8	3.0	4.9
1982	0.8	2.8	4.4
1983	0.8	2.9	4.2
1984	0.8	2.8	3.9
1985	0.8	2.9	3.8
1986	0.8	2.7	3.5

— Not available.

* Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . .," and unpublished tabulations based on the October 1988 CPS public-use micro-data file.

Table 2:6-3 Standard errors for estimated percentages in text table for indicator 2:6

Race/ethnicity and years	High school	Freshman	Sophomore	Junior	Senior
	White				
1981-1986	0.6	0.6	0.7	0.6	0.5
1975-1980	0.5	0.6	0.7	0.6	0.5
	Black				
1981-1986	1.5	1.8	2.3	2.3	2.9
1975-1980	1.5	1.7	2.2	2.2	2.6
	Hispanic*				
1981-1986	2.2	2.5	3.4	3.9	3.4
1975-1980	2.2	2.6	3.8	4.2	5.2

* Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "School Enrollment . . . ," and unpublished tabulations based on the October 1988 public-use micro-data file.

Table 2:7-1 Percentage of high school graduates 25-29 years old who have completed 1 year of college or more, by race/ethnicity and sex: 1965–1987

Year	All races			White			Black			Hispanic*		
	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female
1965	35.6	41.6	29.9	36.0	42.2	30.0	30.4	32.2	29.0	—	—	—
1966	37.0	42.4	31.9	37.7	43.4	32.4	24.9	27.1	23.0	—	—	—
1967	39.7	44.7	35.1	40.6	45.9	35.7	27.3	25.0	29.1	—	—	—
1968	39.1	44.1	34.2	40.0	45.4	34.7	25.5	24.9	26.1	—	—	—
1969	40.9	47.3	34.7	41.9	48.8	35.1	28.2	30.4	26.0	—	—	—
1970	41.6	47.2	35.9	42.2	48.4	35.9	30.7	28.8	32.4	—	—	—
1971	43.5	48.5	38.5	44.4	49.6	39.0	30.2	28.2	31.8	—	—	—
1972	45.1	50.7	39.5	45.9	51.9	39.9	33.1	31.5	34.3	—	—	—
1973	45.3	51.4	39.4	46.0	52.5	39.5	33.3	33.5	33.2	—	—	—
1974	48.9	53.8	44.1	49.9	55.1	44.8	35.5	37.4	33.8	38.7	46.6	31.0
1975	50.1	56.0	44.1	50.8	57.0	44.4	38.9	41.3	36.9	40.4	49.3	31.6
1976	52.1	58.2	46.0	53.1	59.5	46.7	37.4	40.7	34.9	36.4	42.3	31.2
1977	53.2	58.0	48.5	54.3	59.2	49.2	41.8	44.3	39.6	41.1	42.9	39.3
1978	54.4	59.3	49.6	55.3	60.8	49.8	44.9	45.5	44.4	43.7	47.2	40.3
1979	54.1	57.7	50.6	55.1	59.0	51.2	42.0	41.1	42.7	43.9	50.7	38.1
1980	52.3	55.8	49.0	53.1	56.7	49.5	42.4	43.7	41.4	39.9	45.3	34.9
1981	50.1	52.7	47.5	50.6	53.4	47.7	42.6	42.9	42.2	39.6	41.7	37.7
1982	49.9	51.5	48.3	50.1	51.6	48.5	45.7	47.3	44.4	39.5	40.5	38.7
1983	50.6	52.1	49.0	51.1	52.8	49.4	41.8	42.2	41.5	43.1	41.2	44.8
1984	50.1	50.9	49.2	50.7	51.5	49.9	41.7	41.8	41.7	44.9	47.5	42.2
1985	50.8	51.5	50.1	51.3	52.1	50.6	42.6	42.3	42.9	44.1	45.9	42.6
1986	51.0	51.4	50.7	51.7	52.1	51.2	43.6	42.0	45.1	42.9	42.8	43.0
1987	50.7	50.4	51.0	50.9	51.0	50.8	43.1	38.8	46.9	44.7	46.3	43.2

— Not available.

* Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "Educational Attainment in the United States: March . . .," various years.

Indicator 2:7

Table 2:7-2 Standard errors for estimated percentages in text table for indicator 2:7

Year	All races			White			Black			Hispanic[*]		
	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female
1965	0.67	1.00	0.77	0.69	1.01	0.80	2.15	3.22	2.83	—	—	—
1966	0.69	1.02	0.81	0.71	1.03	0.84	2.08	2.85	2.93	—	—	—
1967	0.68	1.00	0.80	0.70	1.00	0.85	1.76	2.39	2.48	—	—	—
1968	0.66	0.96	0.77	0.68	0.97	0.81	1.67	2.32	2.34	—	—	—
1969	0.65	0.95	0.77	0.67	0.95	0.81	1.78	2.60	2.36	—	—	—
1970	0.64	0.93	0.75	0.66	0.92	0.79	1.79	2.53	2.49	—	—	—
1971	0.62	0.90	0.74	0.64	0.89	0.79	1.63	2.47	2.12	—	—	—
1972	0.62	0.89	0.75	0.64	0.88	0.80	1.67	2.38	2.28	—	—	—
1973	0.60	0.86	0.73	0.62	0.86	0.78	1.60	2.25	2.20	—	—	—
1974	0.60	0.85	0.73	0.62	0.86	0.78	1.47	2.18	1.93	2.40	3.42	2.90
1975	0.59	0.84	0.72	0.61	0.84	0.77	1.57	2.35	2.06	2.83	3.98	3.46
1976	0.58	0.83	0.71	0.60	0.82	0.76	1.60	2.36	2.14	2.34	3.67	2.45
1977	0.58	0.81	0.71	0.60	0.82	0.77	1.52	2.17	2.07	2.24	2.96	2.95
1978	0.57	0.80	0.70	0.60	0.81	0.76	1.41	1.99	1.94	2.47	3.22	3.31
1979	0.56	0.79	0.69	0.59	0.80	0.75	1.46	2.25	1.88	2.20	3.17	2.67
1980	0.54	0.80	0.72	0.57	0.82	0.78	1.31	2.03	1.91	2.06	3.10	2.73
1981	0.52	0.77	0.69	0.55	0.79	0.75	1.28	2.02	1.82	1.91	2.96	2.47
1982	0.51	0.77	0.69	0.55	0.79	0.75	1.25	1.92	1.82	2.03	3.08	2.69
1983	0.51	0.77	0.69	0.55	0.79	0.76	1.26	2.00	1.80	2.19	3.06	3.12
1984	0.50	0.75	0.68	0.54	0.77	0.75	1.19	2.01	1.60	2.14	3.01	3.03
1985	0.50	0.75	0.68	0.54	0.78	0.75	1.16	1.73	1.73	1.94	2.87	2.62
1986	0.50	0.73	0.68	0.54	0.77	0.75	1.12	1.58	1.75	1.74	2.48	2.44
1987	0.50	0.73	0.68	0.54	0.77	0.75	1.10	1.72	1.60	1.68	2.44	2.29

— Not available.

[*] Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "Educational Attainment in the United States: March . . .," various years.

Table 2:7-3 Standard errors for estimated percentages in table 2:7-1

Year	All races			White			Black			Hispanic*		
	Both	Male	Female	Both	Male	Female	Both	Male	Female	Both	Male	Female
1965	0.84	1.19	1.03	0.87	1.19	1.08	2.86	4.28	3.77	—	—	—
1966	0.84	1.19	1.03	0.86	1.19	1.08	2.73	4.05	3.60	—	—	—
1967	0.83	1.17	1.02	0.85	1.16	1.08	2.62	3.79	3.53	—	—	—
1968	0.80	1.11	0.99	0.82	1.11	1.05	2.47	3.47	3.43	—	—	—
1969	0.78	1.09	0.97	0.80	1.07	1.02	2.46	3.50	3.38	—	—	—
1970	0.76	1.05	0.95	0.78	1.04	1.00	2.45	3.48	3.38	—	—	—
1971	0.75	1.03	0.94	0.77	1.01	1.00	2.38	3.46	3.20	—	—	—
1972	0.73	1.00	0.91	0.74	0.98	0.96	2.34	3.48	3.10	—	—	—
1973	0.70	0.97	0.88	0.72	0.96	0.93	2.27	3.36	3.02	—	—	—
1974	0.69	0.94	0.88	0.71	0.93	0.93	2.19	3.20	2.93	3.71	5.05	4.63
1975	0.67	0.91	0.85	0.69	0.90	0.91	2.14	3.17	2.84	3.72	5.01	4.63
1976	0.65	0.87	0.83	0.67	0.86	0.88	2.04	3.12	2.63	3.38	4.74	4.15
1977	0.64	0.86	0.82	0.66	0.86	0.88	1.99	2.90	2.68	3.44	4.56	4.50
1978	0.64	0.85	0.81	0.66	0.85	0.87	1.95	2.89	2.60	3.26	4.34	4.24
1979	0.63	0.85	0.81	0.65	0.85	0.86	1.94	2.88	2.57	3.27	4.54	4.06
1980	0.61	0.89	0.83	0.63	0.89	0.90	1.81	2.90	2.57	2.98	4.35	4.03
1981	0.60	0.87	0.82	0.63	0.88	0.88	1.77	2.77	2.56	2.82	4.15	3.84
1982	0.59	0.86	0.81	0.62	0.88	0.88	1.71	2.71	2.45	2.72	3.97	3.73
1983	0.59	0.85	0.80	0.62	0.87	0.87	1.69	2.65	2.42	2.82	4.03	3.95
1984	0.58	0.84	0.79	0.61	0.86	0.86	1.66	2.64	2.36	2.86	4.03	4.05
1985	0.58	0.84	0.79	0.61	0.87	0.86	1.64	2.56	2.36	2.49	3.67	3.39
1986	0.57	0.83	0.78	0.61	0.86	0.85	1.59	2.43	2.35	2.39	3.40	3.37
1987	0.57	0.83	0.78	0.61	0.86	0.86	1.59	2.43	2.33	2.35	3.35	3.30

— Not available.

* Hispanics may be of any race.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20, "Educational Attainment in the United States: March . . .," various years.

Indicator 2:8

Table 2:8-1 Number of graduates from higher education institutions, by sex, field of study, and country

Country	Year	Population age 24	Higher education graduates* Total	Science	Engineering
Males					
Japan	88	849,000	283,850	20,877	75,072
USA	86	1,947,000	485,923	71,410	83,372
Canada	87	234,525	48,406	8,175	6,847
England	86	477,000	76,217	17,353	15,715
W. Germany	85	534,100	81,551	10,189	20,630
France	87	426,554	60,791	15,450	12,132
Females					
Japan	88	817,000	101,497	4,531	2,431
USA	86	2,092,000	501,900	47,040	12,581
Canada	87	234,275	54,664	4,899	823
England	86	466,700	60,858	10,991	1,622
W. Germany	85	504,700	50,418	3,528	1,092
France	87	425,061	61,441	8,833	2,445

* Higher education graduates are persons completing a baccalaureate degree in the U.S. and graduates from an equivalent level of higher education institution in the other countries. This definition is the UNESCO description of level 6 higher education graduates.

SOURCE: Data collected for the Organization for Economic Cooperation and Development Indicators Project on Higher Education.

Indicator 2:9

Table 2:9 Ratio of bachelor's degrees to full-time, first-time freshmen, number of full-time, first-time freshmen, and number of degrees: 1968–1988

Academic year ending	Ratio of bachelor's degrees to full-time, first-time freshman 5 years earlier	Number of full-time, first-time freshmen (thousands)	Number of bachelor's degrees (thousands)
1968	—	1,335	633
1969	—	1,471	729
1970	—	1,525	793
1971	—	1,587	840
1972	—	1,606	887
1973	0.691	1,574	922
1974	0.643	1,607	946
1975	0.605	1,673	923
1976	0.583	1,763	926
1977	0.573	1,663	920
1978	0.585	1,681	921
1979	0.573	1,651	921
1980	0.556	1,706	929
1981	0.530	1,749	935
1982	0.573	1,738	953
1983	0.577	1,688	970
1984	0.590	1,678	974
1985	0.574	1,613	979
1986	0.565	1,602	988
1987	0.570	1,590	991
1988*	0.588	1,627	993

—Not applicable.
*Preliminary.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred and fall enrollment.

Supplemental note 2:9 Quasi-cohort college graduation rates

A cohort college graduation rate is one that surveys a cohort in a base year to determine who has just started college and then surveys the same group of respondents 5 or 6 years later to determine who has completed college. A cohort graduation rate requires a longitudinal survey, that is, a survey of the same sample at two points in time. A quasi-cohort graduation rate attempts to approximate a cohort graduation rate with two cross-sectional surveys, a survey of two different samples of individuals at two points in time. The high school graduation rate reported in the U.S. Department of Education's "State Education Performance Chart" is an example of a quasi-cohort graduation rate. The high school graduation rate is calculated as the ratio of the number of high school graduates in the current year to the number of ninth graders 4 years earlier. If those ninth graders make normal progress through high school, they will graduate in 4 years and be counted in the survey of high school graduates in the current year. Some of the ninth graders will graduate early, in less than 4 years, others will graduate late, in more than 4 years. If the rate at which some members of a ninth grade class graduate earlier and others graduate later than a typical member of the class is stable over time, then the errors will tend to cancel—one year's errors tend to cancel the errors of the years surrounding it. *Changes* over time in the ratio is a useful indicator of changes in dropout and late completion behavior.

We calculate a quasi-cohort college graduation rate as the ratio of the number of baccalaureate degrees awarded in a given year to the number of full-time, first-time freshmen 5 years earlier. Analogous to the example of the high school graduation rate discussed above, the baccalaureate degrees awarded are not restricted to those who were first-time, full-time freshman 5 years earlier. Some were freshman 4, 6, 7, or more years earlier. Similarly, some of the first-time, full-time freshman 5 years earlier will have graduated last year, others will graduate next year, and so on.

The high school graduation rate has received considerable criticism. The criticism is due to 1) calculating state-by-state graduation rates and the difficulty of dealing with interstate migration, 2) the exclusion of private secondary schools from the calculation, and 3) the uneven inclusion by the states of alternative credentials, such as the General Educational Development Exam, used by some students. None of these criticisms are applicable to the college graduation rate we calculate.

Other criticisms, of course, do apply. They are 1) variability among students in the time to completion of the baccalaureate degree, 2) changes over time in the average time to completion as more students attend part time or stop out, and 3) overestimates of the number of first-time freshman at 2-year colleges. The first is not a serious problem, as errors tend to "cancel out," provided that the variability among students is stable over time or changes gradually. The second will cause the indicator to drop or rise temporarily as the time to completion is increasing or decreasing. The third is due to the difficulty institutions have in classifying part-time students as first-time freshmen. At 2-year colleges, where the majority of students are part-time, it is likely that there is a substantial overcount of first-time freshmen. We have addressed the problem by restricting attention to *full-time* first-time freshman.

Measuring changes in college completion rates is very important. No one measure provides a complete answer. This indicator complements the other measure of completion included in this volume (*Indicator 2:7*) which is the ratio of the number of 25- to 29-year-olds who complete 4 or more years of college to those who complete 12 or more years of schooling. Note that this indicator is not restricted to those who start college. The persistence rate (*Indicators 2:5 and 2:6*) provides yet another related measure. Its disadvantage is that it is not based on the attainment of a degree but on continuous attendance from one year to the next. Its advantage is that we can calculate year-by-year continuation rates. The IPEDS/HEGIS data used for *Indicator 2:9* has the advantage of being a complete census of enrollments and degrees conferred. A disadvantage is the absence of a longitudinal link between the degree and first-time enrollment. In this report we present all three measures.

Indicator 2:10

Table 2:10-1 Minority concentration field ratio at the bachelor's degree level: Selected academic years ending 1977–1987

Field of study	1977	1979	1981	1985	1987
Black concentration ratio					
Humanities and social/behavioral sciences	1.02	1.03	1.01	0.98	0.94
Humanities	0.69	0.78	0.74	0.83	0.83
Social and behavioral sciences	1.32	1.27	1.27	1.13	1.06
Natural and computer sciences and engineering	0.60	0.61	0.66	0.75	0.90
Natural sciences	0.65	0.69	0.74	0.81	0.87
Life sciences	0.70	0.77	0.81	0.92	0.92
Physical sciences	0.45	0.44	0.57	0.58	0.73
Mathematics	0.78	0.85	0.82	0.91	0.93
Computer sciences and engineering	0.51	0.51	0.59	0.71	0.92
Computer and information sciences	0.91	0.91	0.83	0.98	1.44
Engineering	0.45	0.45	0.54	0.59	0.71
Technical/professional	1.11	1.11	1.11	1.11	1.07
Education	1.42	1.40	1.35	1.01	0.81
Business and other technical/professional	0.98	1.00	1.04	1.14	1.12
Business and management	1.03	1.01	1.02	1.09	1.07
Other technical/professional	0.93	1.00	1.06	1.19	1.20
Hispanic concentration ratio					
Humanities and social/behavioral sciences	1.23	1.22	1.20	1.15	1.11
Humanities	1.17	1.15	1.11	1.09	1.10
Social and behavioral sciences	1.29	1.28	1.29	1.20	1.13
Natural and computer sciences and engineering	0.85	0.88	0.91	0.92	1.05
Natural sciences	0.82	0.89	0.94	0.95	0.98
Life sciences	0.89	1.04	1.13	1.25	1.26
Physical sciences	0.71	0.66	0.70	0.64	0.77
Mathematics	0.76	0.76	0.72	0.67	0.62
Computer sciences and engineering	0.90	0.86	0.87	0.91	1.09
Computer and information sciences	0.73	0.84	0.89	0.84	1.11
Engineering	0.92	0.86	0.87	0.94	1.09
Technical/professional	0.89	0.91	0.92	0.95	0.92
Education	1.05	1.11	1.12	1.04	0.89
Business and other technical/professional	0.82	0.84	0.86	0.93	0.93
Business and management	0.84	0.85	0.87	0.94	0.97
Other technical/professional	0.80	0.83	0.85	0.93	0.87

*As measured here, the blacks are non-Hispanic.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Table 2:10-2 Percentage distribution of bachelor's degrees conferred, by field of study and race/ethnicity: Selected academic years ending 1977–1987

Race/ethnicity and field of study	1977	1979	1981	1985	1987
White, non-Hispanic					
Number of degrees	805,186	799,617	807,319	826,106	841,820
Total percent	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	33.7	31.2	29.5	27.1	28.2
Humanities	16.2	15.0	14.7	13.7	14.1
Social and behavioral sciences	17.5	16.1	14.9	13.4	14.1
Natural and computer sciences and engineering	15.8	16.6	17.5	20.9	19.7
Natural sciences	10.0	9.2	8.4	7.8	7.4
Life sciences	5.9	5.3	4.6	3.9	3.7
Physical sciences	2.5	2.6	2.6	2.5	2.0
Mathematics	1.6	1.3	1.2	1.5	1.6
Computer sciences and engineering	5.8	7.4	9.1	13.0	12.3
Computer and information sciences	0.7	0.9	1.6	3.8	3.6
Engineering	5.1	6.5	7.5	9.3	8.7
Technical/professional	50.5	52.3	52.9	52.0	52.1
Education	15.5	13.6	11.6	9.4	9.3
Business and other technical/professional	34.9	38.6	41.3	42.6	42.9
Business and management	16.5	18.9	21.6	23.8	24.4
Other technical/professional	18.5	19.8	19.8	18.8	18.5
Black, non-Hispanic					
Number of degrees	58,515	60,130	60,673	57,473	56,555
Total percent	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	34.4	32.0	29.7	26.6	26.6
Humanities	11.2	11.7	10.9	11.3	11.6
Social and behavioral sciences	23.1	20.4	18.9	15.3	15.0
Natural and computer sciences and engineering	9.4	10.1	11.5	15.6	17.8
Natural sciences	6.5	6.4	6.2	6.3	6.4
Life sciences	4.1	4.1	3.7	3.6	3.4
Physical sciences	1.1	1.1	1.5	1.4	1.5
Mathematics	1.2	1.1	1.0	1.3	1.5
Computer sciences and engineering	3.0	3.8	5.3	9.2	11.4
Computer and information sciences	0.6	0.8	1.3	3.7	5.2
Engineering	2.3	2.9	4.0	5.5	6.2
Technical/professional	56.2	57.8	58.7	57.9	55.6
Education	22.1	19.1	15.6	9.5	7.5
Business and other technical/professional	34.1	38.7	43.1	48.4	48.1
Business and management	17.0	19.0	22.1	26.1	26.0
Other technical/professional	17.1	19.7	21.0	22.3	22.1

Table 2:10-2 Percentage distribution of bachelor's degrees conferred, by field of study and race/ethnicity: Selected academic years ending 1977–1987—Continued

Race/ethnicity and field of study	1977	1979	1981	1985	1987
Hispanic					
Number of degrees	18,663	20,029	21,832	25,874	26,990
Total percent	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	41.6	37.9	35.5	31.1	31.4
Humanities	19.0	17.3	16.3	15.0	15.5
Social and behavioral sciences	22.6	20.6	19.2	16.1	15.9
Natural and computer sciences and engineering	13.5	14.5	15.9	19.3	20.7
Natural sciences	8.2	8.2	7.9	7.4	7.2
Life sciences	5.3	5.5	5.2	4.8	4.7
Physical sciences	1.8	1.7	1.9	1.6	1.6
Mathematics	1.2	1.0	0.8	1.0	1.0
Computer sciences and engineering	5.3	6.4	7.9	11.9	13.4
Computer and information sciences	0.5	0.8	1.4	3.2	4.0
Engineering	4.8	5.6	6.6	8.7	9.5
Technical/professional	44.9	47.5	48.6	49.6	47.9
Education	16.3	15.1	13.0	9.8	8.2
Business and other technical/professional	28.6	32.4	35.6	39.8	39.7
Business and management	13.9	16.0	18.8	22.3	23.7
Other technical/professional	14.7	16.5	16.7	17.5	16.0

NOTE: Distributions for 1985 and 1987 include degrees for which missing race/ethnicity could be imputed. The number of degrees reported for 1977 and 1979 exclude those conferred by U.S. Service Schools (0.4 percent or less of degrees).
SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Table 2:10-3 Number of bachelor's degrees conferred, by field of study and race/ethnicity: Selected academic years ending 1977–1987

Race/ethnicity and field of study	1977	1979	1981	1985	1987
White, non-Hispanic					
Total degrees	805,186	799,617	807,319	826,106	841,820
Humanities and social/behavioral sciences	271,490	249,100	238,522	224,152	237,293
Humanities	130,327	120,305	118,286	113,084	118,620
Social and behavioral sciences	141,163	128,795	120,236	111,068	118,673
Natural and computer sciences and engineering	127,177	132,701	141,380	172,388	165,533
Natural sciences	80,313	73,523	67,967	64,629	61,994
Life sciences	47,623	42,705	37,276	31,807	31,279
Physical sciences	20,189	20,650	21,246	20,660	17,159
Mathematics	12,501	10,168	9,445	12,162	13,556
Computer sciences and engineering	46,864	59,178	73,413	107,759	103,539
Computer and information sciences	5,473	7,384	12,565	31,321	30,251
Engineering	41,391	51,794	60,848	76,438	73,288
Technical/professional	406,519	417,816	427,417	429,566	438,994
Education	125,148	108,949	93,724	77,531	78,216
Business and other technical/professional	281,371	308,867	333,693	352,035	360,778
Business and management	132,814	150,759	174,198	196,915	205,118
Other technical/professional	148,557	158,108	159,495	155,120	155,660
Black, non-Hispanic					
Total degrees	58,515	60,130	60,673	57,473	56,555
Humanities and social/behavioral sciences	20,107	19,266	18,045	15,272	15,060
Humanities	6,567	7,014	6,608	6,505	6,583
Social and behavioral sciences	13,540	12,252	11,437	8,767	8,477
Natural and computer sciences and engineering	5,514	6,091	6,994	8,942	10,051
Natural sciences	3,785	3,830	3,759	3,640	3,622
Life sciences	2,413	2,487	2,269	2,045	1,932
Physical sciences	665	691	906	829	844
Mathematics	707	652	584	766	846
Computer sciences and engineering	1,729	2,261	3,235	5,302	6,429
Computer and information sciences	361	505	786	2,143	2,928
Engineering	1,368	1,756	2,449	3,159	3,501
Technical/professional	32,894	34,773	35,634	33,259	31,444
Education	12,922	11,509	9,494	5,456	4,253
Business and other technical/professional	19,972	23,264	26,140	27,803	27,191
Business and management	9,976	11,430	13,400	14,999	14,686
Other technical/professional	9,996	11,834	12,740	12,804	12,505

Table 2:10-3 Number of bachelor's degrees conferred, by field of study and race/ethnicity: Selected academic years ending 1977–1987—Continued

Race/ethnicity and field of study	1977	1979	1981	1985	1987
Hispanic					
Total degrees	18,663	20,029	21,832	25,874	26,990
Humanities and social/behavioral sciences	7,764	7,594	7,754	8,049	8,468
Humanities	3,537	3,469	3,561	3,872	4,184
Social and behavioral sciences	4,227	4,125	4,193	4,177	4,284
Natural and computer sciences and engineering	2,514	2,914	3,469	4,983	5,581
Natural sciences	1,534	1,642	1,734	1,915	1,951
Life sciences	981	1,109	1,144	1,241	1,259
Physical sciences	332	339	405	417	423
Mathematics	221	194	185	257	269
Computer sciences and engineering	980	1,272	1,735	3,068	3,630
Computer and information sciences	93	155	302	826	1,077
Engineering	887	1,117	1,433	2,242	2,553
Technical/professional	8,385	9,521	10,609	12,842	12,941
Education	3,050	3,029	2,847	2,533	2,223
Business and other technical/professional	5,335	6,492	7,762	10,309	10,718
Business and management	2,588	3,196	4,114	5,771	6,397
Other technical/professional	2,747	3,296	3,648	4,538	4,321

NOTE: Distributions for 1985 and 1987 include degrees for which missing race/ethnicity could be imputed. The number of degrees reported for 1977 and 1979 exclude those conferred by U.S. Service Schools (0.4 percent or less of degrees).

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:11

Table 2:11-1 Percent change since 1977 in number of degrees earned and in population, by race: Selected years 1979–1987

Race, degrees, and population	1979	1981	1985	1987
White, non-Hispanic				
Number of degrees:				
Bachelor's	-0.7	0.3	2.6	4.5
Advanced degrees	-3.7	-5.3	-11.3	-9.8
Master's	-6.1	-9.0	-15.7	-13.7
First-professional*	6.9	10.5	8.2	7.3
Doctor's	-2.6	-3.5	-10.8	-8.9
Population:				
Aged 20-34	4.9	10.2	13.3	12.8
Aged 20-24	3.3	5.1	0.9	-5.8
Aged 25-34	5.8	13.3	20.7	23.8
Black, non-Hispanic				
Number of degrees:				
Bachelor's	2.8	3.7	-1.8	-3.3
Advanced degrees	-5.3	-14.0	-27.0	-26.1
Master's	-7.8	-18.5	-33.7	-34.0
First-professional*	11.8	15.5	19.4	34.8
Doctor's	1.1	1.0	-7.9	-15.4
Population:				
Aged 20-34	8.7	18.0	28.7	31.3
Aged 20-24	6.7	11.0	12.3	9.0
Aged 25-34	10.1	22.9	40.1	46.8

*The National Center for Education Statistics recognizes 10 first-professional degree fields: chiropractic, dentistry, law, medicine, optometry, osteopathy, pharmacy, podiatry, theology, and veterinary medicine.

SOURCE: U.S. Department of Education, National Center for Education Statistics, HEGIS/IPEDS surveys of degrees conferred, various years. U.S. Department of Commerce, Bureau of the Census, "Estimates of the Population of the United States, by Age, Sex, and Race," *Current Population Reports*, Series P-25, Nos. 917, 1000, and 1022.

Table 2:11-2 Number of degrees conferred, by race/ethnicity and degree level: Selected academic years ending 1977–1987

Race/ethnicity	1977	1979	1981	1985	1987
			Bachelor's degrees		
White, non-Hispanic	805,186	799,617	807,319	826,106	841,820
Black, non-Hispanic	58,515	60,130	60,673	57,473	56,555
Hispanic	18,663	20,029	21,832	25,874	26,990
Asian or Pacific Islander	13,745	15,336	18,794	25,395	32,618
American Indian/Alaskan Native	3,319	3,404	3,593	4,246	3,971
			Master's degrees		
White, non-Hispanic	265,147	249,051	241,216	223,628	228,870
Black, non-Hispanic	21,024	19,393	17,133	13,939	13,867
Hispanic	6,069	5,544	6,461	6,864	7,044
Asian or Pacific Islander	5,115	5,495	6,282	7,782	8,558
American Indian/Alaskan Native	967	999	1,034	1,256	1,104
			Doctor's degrees		
White, non-Hispanic	26,836	26,128	25,908	23,934	24,435
Black, non-Hispanic	1,253	1,267	1,265	1,154	1,060
Hispanic	522	439	456	677	750
Asian or Pacific Islander	658	811	877	1,106	1,097
American Indian/Alaskan Native	95	104	130	119	104
			First-professional degrees*		
White, non-Hispanic	58,422	62,430	64,551	63,219	62,688
Black, non-Hispanic	2,537	2,836	2,931	3,029	3,420
Hispanic	1,076	1,283	1,541	1,884	2,061
Asian or Pacific Islander	1,021	1,205	1,456	1,816	2,270
American Indian/Alaskan Native	196	216	192	248	304

*See table 2:11-1 for definition.

NOTE: Degrees earned by nonresident aliens are not included. The total number of degrees reported in this table is lower than the total actually conferred because of missing racial/ethnic data. The numbers reported for 1977 and 1979 do not include degrees conferred by U.S. Service Schools (0.4 percent or less of total degrees).

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Table 2:11-3 Number of degrees conferred, by sex, degree level, and race/ethnicity: Academic years ending 1977 and 1987

Degree level and race/ethnicity	Men		Women	
	1977	1987	1977	1987
Bachelor's degrees				
White, non-Hispanic	435,659	406,751	369,527	435,069
Black, non-Hispanic	25,026	22,499	33,489	34,056
Hispanic	10,238	12,864	8,425	14,126
Asian or Pacific Islander	7,590	17,249	6,155	15,369
American Indian/Alaskan Native	1,797	1,819	1,522	2,152
Master's degrees				
White, non-Hispanic	138,303	105,573	126,844	123,297
Black, non-Hispanic	7,769	5,151	13,255	8,716
Hispanic	3,266	3,330	2,803	3,714
Asian or Pacific Islander	3,116	5,238	1,999	3,320
American Indian/Alaskan Native	521	517	446	587
Doctor's degrees				
White, non-Hispanic	20,017	14,813	6,819	9,622
Black, non-Hispanic	766	488	487	572
Hispanic	383	439	139	311
Asian or Pacific Islander	540	795	118	302
American Indian/Alaskan Native	67	58	28	46
First-professional degrees*				
White, non-Hispanic	47,777	41,149	10,645	21,539
Black, non-Hispanic	1,761	1,835	776	1,585
Hispanic	893	1,303	183	748
Asian or Pacific Islander	776	1,420	245	850
American Indian/Alaskan Native	159	183	37	121

*See table 2:11-1 for definition.

NOTE: Data for nonresident aliens are not shown. Data for 1977 exclude degrees conferred by U.S. Service Schools (0.4 percent or less of degrees conferred).

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:12

Table 2:12-1 Scores on the Graduate Record Examinations (GRE) and the ratio of the number of GRE test-takers to the number of baccalaureate degrees awarded: Academic years ending 1965–1988

	Test-takers		GRE Scores					
				Verbal		Quantitative		
Year	Number	Percent of BAs	Total	Mean	Std*	Mean	Std*	Number of BAs
1965	93,792	18.7	1,063	530	124	533	137	501,713
1966	123,960	23.8	1,048	520	124	528	133	520,923
1967	151,134	27.0	1,047	519	125	528	134	558,852
1968	182,432	28.8	1,047	520	124	527	135	632,758
1969	206,113	28.3	1,039	515	124	524	132	729,071
1970	265,359	33.5	1,019	503	123	516	132	792,656
1971	293,600	35.0	1,009	497	125	512	134	839,730
1972	293,506	33.1	1,002	494	126	508	136	887,273
1973	290,104	31.5	1,009	497	125	512	135	922,362
1974	301,070	31.8	1,001	492	126	509	137	945,776
1975	298,335	32.3	1,001	493	125	508	137	922,933
1976	299,292	32.3	1,002	492	127	510	138	925,746
1977	287,715	31.3	1,004	490	129	514	139	919,549
1978	286,383	31.1	1,002	484	128	518	135	921,204
1979	282,482	30.7	993	476	130	517	135	921,390
1980	272,281	29.3	996	474	131	522	136	929,417
1981	262,855	28.1	996	473	128	523	136	935,140
1982	256,381	26.9	1,002	469	130	533	137	952,998
1983	263,674	27.2	1,014	473	131	541	138	969,510
1984	265,221	27.2	1,016	475	130	541	139	974,309
1985	271,972	27.8	1,019	474	126	545	140	979,477
1986	279,428	28.3	1,027	475	126	552	140	987,823
1987	293,560	29.7	1,027	477	126	550	140	987,000
1988	303,703	30.7	1,040	483	123	557	140	989,000

* Standard deviation of scores.

SOURCE: Educational Testing Service.

Table 2:12-2 Characteristics of Graduate Record Examination test-takers: Academic years ending 1976–1988

Year	English not preferred language	Not a U.S. citizen
	Percent	
1975-76	7.5	6.0
1976-77	8.7	6.0
1977-78	8.9	6.0
1978-79	10.0	8.0
1979-80	10.7	8.0
1980-81	13.2	9.0
1981-82	13.3	10.2
1982-83	13.9	10.8
1983-84	14.1	11.4
1984-85	15.1	11.8
1985-86	15.5	12.4
1986-87	15.8	12.7
1987-88	15.9	12.7

SOURCE: Graduate Record Examination Board, *A Summary of Data Collected From Graduate Record Examinations Test Takers During During 1986—1987: Data Summary Report #12*, June 1988 and earlier editions.

Table 2:12-3 Graduate Record Examination scores for U.S. citizens only: Academic years ending 1973–1987

Year	Verbal			Quantitative		
	Mean	Std	Percent > 500	Mean	Std	Percent > 500
1972-73	500	—	—	510	—	—
1973-74	498	—	—	505	—	—
1974-75	497	—	—	507	—	—
1975-76	498	—	—	507	—	—
1976-77	495	—	—	509	—	—
1977-78	491	—	—	512	—	—
1978-79	499	118	49.7	512	130	53.8
1979-80	500	117	50.1	513	129	54.7
1980-81	499	115	50.8	516	130	55.8
1981-82	498	115	49.4	521	132	58.8
1982-83	503	117	50.9	529	133	59.7
1983-84	504	116	50.7	528	134	58.4
1984-85	502	114	49.9	527	134	58.6
1985-86	506	113	52.0	532	134	60.2
1986-87	505	115	51.5	531	134	59.5

— Not available.

SOURCE: Graduate Record Examination Board, *A Summary of Data Collected From Graduate Record Examinations Test Takers During During 1986—1987: Data Summary Report #12*, June 1988 and earlier editions.

Indicator 2:13

Table 2:13-1 Employment and enrollment status of baccalaureate degree recipients 1 year after graduation, by major field of study: Year of graduation 1986

Major field of study	Total	Employed	Enrolled	Unem-ployed	Not in labor force	Other
All fields	100	74	11	4	4	7
Technical/professional	100	81	6	4	3	6
Arts and sciences	100	62	21	5	5	7
Other	100	75	9	5	4	8
Technical/professional						
Engineering	100	83	8	5	2	3
Business and management	100	85	4	4	3	4
Health	100	75	8	2	4	10
Education	100	75	6	3	4	12
Public affairs/social services	100	75	8	4	4	9
Arts and sciences						
Biological sciences	100	42	41	3	6	8
Physical sciences/mathematics	100	75	13	4	3	5
Psychology	100	65	17	4	7	7
Social sciences	100	60	23	5	6	6
Humanities	100	58	20	6	5	11
Other						
Communications	100	78	5	5	4	9
Miscellaneous	100	75	9	5	4	8

NOTE: Employed includes employed full-time. Enrolled includes those enrolled and not employed full-time. Unemployed includes those neither employed nor enrolled but looking for work. Not in labor force includes those neither employed full-time, nor enrolled, nor looking for work. Other includes employed part-time and not enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

Indicator 2:13

Table 2:13-2 Employment and enrollment status of baccalaureate degree recipients 1 year after graduation, by major field of study: Year of graduation 1984

Major field of study	Total	Employed	Military	Enrolled	Un-employed	Not in labor force	Other
All fields	100	71	2	13	3	5	7
Technical/professional	100	78	2	7	3	4	6
Arts and sciences	100	55	2	25	3	6	9
Other	100	75	2	9	4	5	5
Technical/professional							
Engineering	100	79	6	10	0	2	2
Business and management	100	83	2	4	3	4	3
Health	100	73	1	9	2	3	12
Education	100	73	1	7	2	4	13
Public affairs/social services	100	71	4	9	5	3	8
Arts and sciences							
Biological sciences	100	45	2	38	2	7	7
Physical sciences/mathematics	100	45	7	36	2	6	5
Psychology	100	56	2	23	4	7	10
Social sciences	100	59	3	24	3	4	7
Humanities	100	58	1	19	4	6	12
Other							
Communications	100	76	1	6	5	4	8
Miscellaneous	100	75	2	10	3	5	5

NOTE: Employed includes employed full-time or in the military. Enrolled includes those enrolled and not employed full-time. Unemployed includes those neither employed nor enrolled but looking for work. Not in labor force includes those neither employed full-time, nor enrolled, nor looking for work. Other includes employed part-time and not enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

Table 2:13-3 Employment and enrollment status of baccalaureate degree recipients 1 year after graduation, by major field of study: Year of graduation 1980

Major field of study	Total	Employed	Enrolled	Unemployed	Not in labor force	Other
All fields	100	71	13	6	3	7
Technical/professional	100	80	7	4	3	6
Arts and sciences	100	56	24	8	4	8
Other	100	74	10	5	4	7
Technical/professional						
Engineering	100	84	8	4	4	2
Business and management	100	83	7	4	2	4
Health	100	77	6	4	2	12
Education	100	76	7	4	3	9
Public affairs/social services	100	77	10	1	5	6
Arts and sciences						
Biological sciences	100	46	35	7	4	9
Physical sciences/mathematics	100	59	30	7	2	3
Psychology	100	56	27	7	2	7
Social sciences	100	61	22	7	4	6
Humanities	100	56	17	12	5	11
Other						
Communications	100	71	6	3	7	13
Miscellaneous	100	75	11	6	3	5

NOTE: Employed includes employed full-time or in the military. Enrolled includes those enrolled and not employed full-time. Unemployed includes those neither employed nor enrolled but looking for work. Not in labor force includes those neither employed full-time, nor enrolled, nor looking for work. Other includes employed part-time and not enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

Table 2:13-4 Standard errors for estimated percentages in table 2:13-1

Major field of study	Employed	Enrolled	Unemployed	Not in labor force	Other
All fields	0.5	0.4	0.3	0.2	0.3
Technical/professional	0.6	0.4	0.3	0.2	0.3
Arts and sciences	1.0	0.8	0.5	0.4	0.5
Other	1.4	1.0	0.7	0.8	1.0
Technical/professional					
Engineering	1.3	0.9	0.8	0.4	0.5
Business and management	0.8	0.4	0.4	0.4	0.4
Health	1.5	1.1	0.4	0.6	0.9
Education	1.2	0.6	0.4	0.5	0.9
Public affairs/social services	2.7	1.7	1.3	1.3	1.7
Arts and sciences					
Biological sciences	2.7	2.5	1.0	1.2	1.4
Physical sciences/mathematics	1.3	1.1	0.5	0.4	0.5
Psychology	2.8	2.0	1.1	1.2	1.4
Social sciences	1.8	1.6	0.8	0.8	0.9
Humanities	1.7	1.2	1.5	0.9	1.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

Table 2:13-5 Selected standard errors for estimated percentages in table 2:13-2

Major field of study	Employed	Enrolled	Unemployed
All fields	0.4	0.5	0.2
Technical/professional			
Engineering	1.7	1.1	0.6
Business and management	0.8	0.4	0.4
Health	1.7	1.4	0.7
Education	1.4	0.3	0.4
Public affairs/social services	5.5	2.1	1.5
Arts and sciences			
Biological sciences	4.4	3.6	0.7
Physical sciences/mathematics	1.9	1.8	0.3
Psychology	3.9	2.9	1.1
Social sciences	1.9	2.0	0.5
Humanities	5.7	1.7	0.7
Other	4.6	1.3	0.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Recent College Graduates surveys, unpublished tabulations.

Indicator 2:14

Table 2:14-1 Employment rate of 25- to 34-year-olds, by sex and years of schooling completed: 1971–1988

Year	Male			Female		
	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
			Percent			
1971	93.6	89.9	92.5	43.1	44.9	56.9
1972	93.7	90.4	93.6	44.9	47.4	59.8
1973	93.1	88.5	93.5	45.7	51.0	62.6
1974	93.0	90.0	92.7	47.6	54.2	66.6
1975	88.4	87.6	93.5	48.0	53.6	66.4
1976	89.6	89.0	92.8	49.8	56.5	68.8
1977	89.5	89.1	93.3	53.0	58.0	69.5
1978	90.8	91.2	93.5	55.9	63.3	72.1
1979	91.3	90.9	94.1	58.0	64.2	74.0
1980	87.0	88.5	93.4	59.5	66.3	75.5
1981	86.9	88.5	93.7	61.3	67.6	76.4
1982	83.3	85.2	91.9	59.6	68.2	77.7
1983	78.6	83.8	91.1	58.8	68.3	79.2
1984	84.8	87.9	91.9	61.0	69.5	80.4
1985	86.1	89.7	92.2	63.9	71.0	80.6
1986	86.2	89.0	93.7	63.8	70.6	80.3
1987	86.8	89.0	92.1	65.6	72.2	81.4
1988	87.2	89.8	93.7	66.8	74.8	81.2

NOTE: The employment rate is the percent of the population employed.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, and unpublished tabulations.

Table 2:14-2 Labor force participation rate of 25- to 34-year-olds, by sex and years of schooling completed: 1971–1988

Year	Male			Female		
	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
			Percent			
1971	97.9	94.3	95.2	46.2	47.7	59.2
1972	97.7	94.1	95.5	47.3	49.9	61.5
1973	96.5	91.9	95.8	48.4	53.0	64.2
1974	96.8	93.6	95.0	50.2	56.5	68.7
1975	96.1	94.2	96.1	53.3	57.5	68.9
1976	96.8	94.8	95.5	54.6	60.9	71.3
1977	96.4	94.1	96.2	57.8	62.2	72.4
1978	96.6	94.8	95.8	60.2	66.4	74.3
1979	96.5	95.2	97.0	61.9	67.4	76.6
1980	96.3	94.2	95.7	64.3	70.5	77.5
1981	96.1	94.2	96.1	66.9	71.6	78.7
1982	95.9	93.8	95.8	66.6	73.1	80.7
1983	94.9	94.2	95.2	66.3	74.2	82.6
1984	94.9	94.2	94.8	67.8	74.2	82.9
1985	95.1	94.4	94.9	69.9	75.5	82.8
1986	95.0	93.7	95.7	69.8	75.2	82.4
1987	94.6	93.9	94.9	71.2	76.0	83.5
1988	94.4	93.7	95.9	71.1	78.3	83.2

NOTE: The labor force participation rate is the percent of the population either employed or unemployed, that is, without a job and looking for work. Those not in the labor force are neither employed nor looking for work.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, and unpublished tabulations.

Table 2:14-3 Unemployment rates of 25- to 34-year-olds, by sex and years of schooling completed: 1971–1988

	Male			Female		
Year	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
			Percent			
1971	4.4	4.6	2.8	6.6	5.9	4.0
1972	4.1	4.0	2.0	5.1	5.1	2.8
1973	3.5	3.7	2.4	5.7	3.7	2.6
1974	4.0	3.9	2.4	5.3	4.2	3.1
1975	9.5	6.1	2.4	10.1	6.9	3.6
1976	7.5	6.1	2.8	8.8	7.2	3.6
1977	7.1	5.4	3.0	8.3	6.8	4.1
1978	6.0	3.8	2.4	7.2	4.7	2.9
1979	5.4	4.5	2.0	6.2	4.7	3.5
1980	9.7	6.0	2.5	7.5	5.9	2.6
1981	9.5	6.1	2.4	8.5	5.6	2.9
1982	13.1	9.2	4.0	10.6	6.7	3.7
1983	17.2	11.1	4.3	11.3	7.9	4.1
1984	10.6	6.7	3.0	10.1	6.4	3.1
1985	9.5	4.9	2.8	8.6	5.9	2.7
1986	9.3	5.0	2.1	8.6	6.1	2.5
1987	8.2	5.3	3.0	7.9	5.0	2.5
1988	7.6	4.2	2.3	6.1	4.4	2.4

NOTE: The unemployment rate is the percent of the labor force unemployed. The unemployed are those without a job and looking for work. The labor force is the sum of those with jobs and those unemployed; it excludes those without jobs and not looking for work.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, and unpublished tabulations.

Table 2:14-4 Standard errors for estimated percentages in table 2:14-1

Year	Male			Female		
	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
1971	0.5	1.0	0.8	1.3	2.4	2.2
1972	0.5	0.9	0.7	1.3	2.3	2.0
1973	0.5	1.0	0.7	1.2	2.2	1.9
1974	0.5	0.9	0.7	1.2	1.9	1.6
1975	0.6	0.9	0.6	1.2	1.9	1.5
1976	0.6	0.8	0.6	1.1	1.7	1.4
1977	0.6	0.8	0.5	1.1	1.6	1.3
1978	0.6	0.7	0.5	1.1	1.5	1.3
1979	0.5	0.7	0.5	1.0	1.4	1.2
1980	0.7	0.8	0.6	1.0	1.4	1.2
1981	0.6	0.8	0.5	1.0	1.3	1.2
1982	0.7	0.9	0.6	1.0	1.3	1.1
1983	0.8	0.9	0.6	1.0	1.3	1.0
1984	0.6	0.8	0.6	1.0	1.2	1.0
1985	0.6	0.7	0.6	0.9	1.2	1.0
1986	0.6	0.7	0.5	0.9	1.2	1.0
1987	0.6	0.8	0.6	0.9	1.1	0.9
1988	0.6	0.7	0.5	0.9	1.1	0.9

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, and unpublished tabulations.

Table 2:14-5 Standard errors for estimated percentages in table 2:14-2

Year	Male			Female		
	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
1971	0.3	0.7	0.6	0.9	1.7	1.7
1972	0.3	0.7	0.6	0.9	1.6	1.6
1973	0.4	0.8	0.5	0.9	1.6	1.5
1974	0.3	0.7	0.5	0.9	1.4	1.3
1975	0.4	0.6	0.5	0.8	1.4	1.3
1976	0.3	0.6	0.5	0.8	1.3	1.2
1977	0.4	0.6	0.4	0.8	1.3	1.1
1978	0.3	0.5	0.4	0.8	1.2	1.1
1979	0.3	0.5	0.4	0.8	1.1	1.0
1980	0.4	0.6	0.4	0.8	1.1	1.0
1981	0.4	0.6	0.4	0.8	1.1	1.0
1982	0.4	0.6	0.4	0.8	1.0	0.9
1983	0.4	0.5	0.5	0.8	1.0	0.9
1984	0.4	0.6	0.5	0.8	1.0	0.8
1985	0.4	0.5	0.5	0.7	1.0	0.8
1986	0.4	0.6	0.4	0.7	1.0	0.8
1987	0.4	0.6	0.5	0.7	0.9	0.8
1988	0.4	0.6	0.4	0.7	0.9	0.8

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, and unpublished tabulations.

Table 2:14-6 Standard errors for estimated percentages in table 2:14-3

Year	Male			Female		
	4 years of high school	1-3 years of college	4 or more years of college	4 years of high school	1-3 years of college	4 or more years of college
1971	0.4	0.7	0.5	0.7	1.1	0.9
1972	0.4	0.6	0.4	0.6	1.0	0.7
1973	0.4	0.6	0.4	0.6	0.8	0.6
1974	0.4	0.6	0.4	0.5	0.8	0.6
1975	0.6	0.7	0.4	0.7	0.9	0.6
1976	0.5	0.6	0.4	0.6	0.9	0.6
1977	0.5	0.6	0.4	0.6	0.8	0.6
1978	0.5	0.5	0.3	0.6	0.6	0.5
1979	0.4	0.5	0.3	0.5	0.6	0.5
1980	0.6	0.6	0.3	0.6	0.7	0.4
1981	0.6	0.6	0.3	0.6	0.7	0.5
1982	0.6	0.7	0.4	0.6	0.7	0.5
1983	0.7	0.8	0.4	0.6	0.7	0.5
1984	0.6	0.6	0.4	0.6	0.7	0.4
1985	0.5	0.5	0.4	0.5	0.6	0.4
1986	0.5	0.5	0.3	0.5	0.6	0.4
1987	0.5	0.5	0.4	0.5	0.5	0.4
1988	0.5	0.5	0.3	0.4	0.5	0.4

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Educational Attainment of Workers*, and unpublished tabulations.

Supplemental note 2:14 Labor force statistics

The Bureau of Labor Statistics classifies the labor force status of an individual into three categories: (1) employed, (2) unemployed, and (3) not in the labor force. An *employed* individual is someone with a job and working. Also included are those not working but with jobs from which they are temporarily absent because of illness, vacation, labor-management disputes, bad weather, and personal reasons. Those in the military are also counted as employed. An *unemployed* individual is someone without a job, available for work, and who has made specific efforts to find employment some time during the prior 4 weeks. Also included are persons waiting to be recalled to a job from which they had been laid off or are waiting to report to a new job within 30 days. Individuals who are neither employed nor unemployed are *not in the labor force*.

The *labor force* comprises all persons classified as employed or unemployed. The *unemployment rate* represents the number unemployed as a percent of the labor force. The *labor force participation rate* is the ratio of the labor force to the population. The *employment-population* is the percentage of employed individuals in the population. We refer to the last statistic as the *employment rate* in indicator 2:14.

Each of these statistics is typically reported in two forms, one that includes the military and one that excludes them. For instance, the *civilian employment-population ratio* is the percentage of all employed civilians in the civilian non-institutional population. The *civilian labor force participation rate* is the ratio of the civilian labor force to the civilian non-institutional population. The labor force statistics reported in *Indicator 2:14* and its associated supplemental tables are all for the civilian non-institutional population.

Each of these measures can be computed for groups classified by age, sex, race, Hispanic origin, etc.

Further elaboration on these labor force statistics is available in the explanatory notes of *Employment and Earnings*, published monthly by the Bureau of Labor Statistics of the U.S. Department of Labor.

Indicator 2:15

Table 2:15-1 Ratio of mean annual earnings of all workers with 1-3 and 4 or more years of college to those with 4 years of high school, by sex and age: 1975–1987

Year	Males				Females			
	1-3 years of college		4 or more years of college		1-3 years of college		4 or more years of college	
	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old
	All workers with earnings							
1975	1.030	1.156	1.163	1.439	1.219	1.377	1.560	1.707
1976	0.979	1.138	1.160	1.379	1.106	1.352	1.481	1.556
1977	1.024	1.079	1.170	1.333	1.192	1.251	1.480	1.448
1978	1.005	1.094	1.140	1.364	1.151	1.292	1.461	1.534
1979	1.030	1.066	1.161	1.321	1.192	1.283	1.471	1.619
1980	1.019	1.062	1.185	1.336	1.268	1.272	1.491	1.607
1981	1.033	1.082	1.228	1.418	1.214	1.313	1.549	1.616
1982	1.097	1.089	1.328	1.506	1.166	1.353	1.517	1.622
1983	1.114	1.124	1.327	1.489	1.266	1.337	1.568	1.697
1984	1.065	1.125	1.321	1.439	1.256	1.306	1.580	1.607
1985	1.060	1.212	1.406	1.616	1.237	1.356	1.698	1.623
1986	1.119	1.176	1.455	1.616	1.286	1.431	1.724	1.841
1987	1.089	1.134	1.425	1.570	1.259	1.415	1.676	1.827
	Year-round, full-time workers							
1975	1.074	1.136	1.161	1.398	1.091	1.212	1.369	1.487
1976	1.040	1.139	1.182	1.357	1.138	1.124	1.313	1.435
1977	1.054	1.064	1.177	1.317	1.107	1.160	1.255	1.421
1978	1.024	1.091	1.172	1.335	1.070	1.161	1.244	1.498
1979	1.034	1.089	1.173	1.310	1.155	1.152	1.299	1.484
1980	1.032	1.069	1.173	1.290	1.119	1.183	1.300	1.485
1981	1.061	1.071	1.226	1.359	1.128	1.199	1.370	1.482
1982	1.112	1.065	1.288	1.386	1.159	1.129	1.366	1.449
1983	1.141	1.083	1.317	1.387	1.154	1.225	1.359	1.497
1984	1.073	1.093	1.287	1.367	1.111	1.170	1.366	1.435
1985	1.081	1.201	1.370	1.539	1.152	1.221	1.464	1.486
1986	1.131	1.155	1.452	1.526	1.180	1.225	1.522	1.634
1987	1.090	1.113	1.418	1.503	1.160	1.230	1.472	1.640

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . .," various years, based on the March supplement to the Current Population Survey.

Table 2:15-2 Standard errors for ratios in table 2:15-1

	Males				Females			
	1-3 years of college		4 or more years of college		1-3 years of college		4 or more years of college	
Year	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old
All workers with earnings								
1975	0.02	0.03	0.02	0.03	0.04	0.06	0.04	0.06
1976	0.02	0.03	0.02	0.03	0.04	0.06	0.04	0.05
1977	0.03	0.03	0.02	0.02	0.04	0.05	0.03	0.04
1978	0.03	0.03	0.02	0.03	0.04	0.06	0.04	0.05
1979	0.03	0.03	0.02	0.02	0.04	0.05	0.04	0.04
1980	0.02	0.03	0.02	0.02	0.04	0.05	0.04	0.04
1981	0.03	0.03	0.02	0.02	0.04	0.05	0.03	0.04
1982	0.03	0.03	0.02	0.02	0.04	0.05	0.03	0.04
1983	0.03	0.03	0.03	0.03	0.04	0.05	0.03	0.04
1984	0.03	0.03	0.02	0.02	0.04	0.04	0.03	0.04
1985	0.03	0.04	0.03	0.03	0.04	0.05	0.04	0.05
1986	0.04	0.04	0.03	0.03	0.05	0.06	0.04	0.04
1987	0.03	0.04	0.03	0.03	0.05	0.05	0.04	0.04
Year-round, full-time workers								
1975	0.02	0.03	0.02	0.02	0.03	0.04	0.03	0.04
1976	0.03	0.03	0.02	0.02	0.03	0.04	0.04	0.04
1977	0.03	0.03	0.02	0.02	0.03	0.04	0.02	0.03
1978	0.03	0.03	0.02	0.03	0.03	0.04	0.03	0.04
1979	0.03	0.03	0.02	0.02	0.03	0.04	0.04	0.03
1980	0.02	0.03	0.02	0.02	0.03	0.04	0.03	0.03
1981	0.03	0.03	0.02	0.02	0.03	0.04	0.02	0.03
1982	0.03	0.03	0.02	0.02	0.03	0.04	0.03	0.03
1983	0.03	0.03	0.02	0.02	0.03	0.04	0.03	0.03
1984	0.03	0.03	0.02	0.02	0.03	0.03	0.02	0.03
1985	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.05
1986	0.03	0.04	0.03	0.03	0.04	0.05	0.04	0.03
1987	0.03	0.04	0.03	0.02	0.04	0.04	0.03	0.03

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . .," various years, based on the March supplement to the Current Population Survey.

Table 2:15-3 Mean annual earnings of workers with 4 years of high school, by employment status, sex, and age: 1975–1987

	All workers				Year-round, full-time workers			
	Male		Female		Male		Female	
Year	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old
	(Constant 1989 dollars)							
1975	$23,380	$27,229	$11,791	$11,484	$27,000	$30,339	$17,524	$18,434
1976	23,715	27,437	12,020	11,944	27,137	30,189	18,073	18,484
1977	23,309	28,676	12,199	12,444	26,808	31,363	18,342	18,413
1978	24,012	28,347	12,036	12,305	27,366	31,051	18,056	18,336
1979	23,460	27,888	12,151	12,186	26,851	30,401	17,672	18,094
1980	21,592	25,932	11,906	11,806	25,208	28,714	17,303	17,599
1981	20,481	23,872	11,344	11,990	23,992	27,184	16,532	17,314
1982	19,237	22,504	11,739	11,966	23,128	26,573	16,644	17,794
1983	19,398	22,608	11,666	12,192	23,080	26,381	16,616	17,655
1984	20,579	23,419	12,063	12,478	24,182	26,848	17,135	17,943
1985	20,296	22,678	11,963	13,247	23,752	25,802	16,862	18,737
1986	19,854	23,746	12,205	12,647	23,059	26,914	16,790	18,267
1987	20,335	23,914	12,546	13,124	23,661	27,021	17,063	18,260

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . .," various years, based on the March supplement to the Current Population Survey.

Table 2:15-4 Standard errors for estimated mean annual earnings in table 2:15-3

	All workers				Year-round, full-time workers			
	Male		Female		Male		Female	
Year	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old	25-29 years old	30-34 years old
1975	269	336	206	250	312	388	229	319
1976	299	333	210	259	360	349	241	337
1977	294	365	216	243	340	388	260	300
1978	302	427	242	263	333	480	271	322
1979	310	376	214	242	366	398	240	305
1980	273	364	204	227	310	397	248	285
1981	270	322	196	225	316	358	235	263
1982	253	345	207	252	317	407	265	344
1983	246	319	199	253	297	357	236	318
1984	275	329	203	228	332	355	247	273
1985	293	324	224	262	354	341	291	320
1986	255	396	215	244	289	425	255	314
1987	286	351	216	247	335	393	265	311

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-60, "Money Income of Families and Persons: March . . .," various years.

Indicator 2:16

Table 2:16-1. Number of degrees conferred at institutions of higher education, by level of degree: Academic years ending 1971–1988

Year	Total	Associate degrees	Bachelor's degrees	Master's degrees	Doctor's degrees	First-professional degrees[1]
1971	1,392,902	252,610	839,730	230,509	32,107	37,946
1972	1,507,799	292,119	887,273	251,633	33,363	43,411
1973	1,586,702	316,174	922,362	263,371	34,777	50,018
1974	1,654,365	343,924	945,776	277,033	33,816	53,816
1975	1,665,553	360,171	922,933	292,450	34,083	55,916
1976	1,725,684	391,454	925,746	311,771	34,064	62,649
1977	1,740,681	406,377	919,549	317,164	33,232	64,359
1978	1,743,782	412,246	921,204	311,620	32,131	66,581
1979	1,726,749	402,702	921,[illegible]0	301,079	32,730	68,848
1980	1,731,154	400,910	929,417	298,081	32,615	70,131
1981	1,752,170	416,377	935,140	295,739	32,958	71,956
1982	1,787,798	434,515	952,998	295,546	32,707	72,032
1983	1,821,783	456,441	969,510	289,921	32,775	73,136
1984	1,818,604	452,416	974,309	284,263	33,209	74,407
1985	1,828,446	454,712	979,477	286,251	32,943	75,063
1986	1,830,000	446,047	987,823	288,567	33,653	73,910
1987	1,824,903	437,137	991,339	289,557	34,120	72,750
1988[2]	1,832,886	435,537	993,362	298,733	34,839	70,415

[1] The National Center for Education Statistics recognizes 10 first-professional degree fields: chiropractic, dentistry, law, medicine, optometry, osteopathy, pharmacy, podiatry, theology, and veterinary medicine.

[2] Preliminary.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:16

Table 2:16-2. Percent change in the number of degrees conferred at institutions of higher education since 1971, by level of degree: Academic years ending 1972–1988

Year	Total	Associate degrees	Bachelor's degrees	Master's degrees	Doctor's degrees	First-professional degrees [1]
1972	8.2	15.6	5.7	9.2	3.9	14.4
1973	13.9	25.2	9.8	14.3	8.3	31.8
1974	18.8	36.1	12.6	20.2	5.3	41.8
1975	19.6	42.6	9.9	26.9	6.2	47.4
1976	23.9	55.0	10.2	35.3	6.1	65.1
1977	25.0	60.9	9.5	37.6	3.5	69.6
1978	25.2	63.2	9.7	35.2	0.1	75.5
1979	24.0	59.4	9.7	30.6	1.9	81.4
1980	24.3	58.7	10.7	29.3	1.6	84.8
1981	25.8	64.8	11.4	28.3	2.7	89.6
1982	28.4	72.0	13.5	28.2	1.9	89.8
1983	30.8	80.7	15.5	25.8	2.1	92.7
1984	30.6	79.1	16.0	23.3	3.4	96.1
1985	31.3	80.0	16.6	24.2	2.6	97.8
1986	31.4	76.6	17.6	25.2	4.8	94.8
1987	31.0	73.0	18.1	25.6	6.3	91.7
1988 [2]	31.6	72.4	18.3	29.6	8.5	85.6

[1] See table 2:16-1 for definition.

[2] Preliminary.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:16

Table 2:16-3 Size of population aged 20-24 and 25-34 and percent change in population since 1971: 1972–1988

	Size of population (in thousands)		Percent change in population since 1971	
Year (July)	Aged 20-24	Aged 25-34	Aged 20-24	Aged 25-34
1971	18,159	25,958	—	—
1972	18,153	27,623	0.0	6.4
1973	18,521	28,939	2.0	11.5
1974	18,975	30,225	4.5	16.4
1975	19,527	31,471	7.5	21.2
1976	19,986	32,759	10.1	26.2
1977	20,499	33,998	12.9	31.0
1978	20,946	34,963	15.3	34.7
1979	21,297	36,203	17.3	39.5
1980	21,584	37,626	18.9	44.9
1981	21,821	39,159	20.2	50.9
1982	21,807	39,741	20.1	53.1
1983	21,700	40,602	19.5	56.4
1984	21,536	41,429	18.6	59.6
1985	21,214	42,237	16.8	62.7
1986	20,613	42,984	13.5	65.6
1987	19,984	43,517	10.1	67.6
1988	19,374	43,886	6.7	69.1

—Not applicable.

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, "United States Population Estimates, by Age, Sex, and Race". Series P-25, Nos. 917, 1000, 1022, and 1045.

Indicator 2:17

Table 2:17-1 Number of bachelor's degrees conferred, by field of study: Selected academic years ending 1971–1988

Field of study	1971	1972	1974	1976	1978
Total	839,730	887,273	945,776	925,746	921,204
Humanities and social/behavioral sciences	336,627	350,288	358,082	326,810	300,553
Humanities	143,511	149,158	155,963	150,615	143,167
Social and behavioral sciences	193,116	201,130	202,119	176,195	157,386
Natural and computer sciences and engineering	134,390	136,317	146,195	143,707	149,912
Natural sciences	81,956	81,751	91,153	91,724	87,057
Life sciences	35,743	37,293	48,340	54,275	51,502
Physical sciences	21,412	20,745	21,178	21,465	22,986
Mathematics	24,801	23,713	21,635	15,984	12,569
Computer sciences and engineering	52,434	54,566	55,042	51,983	62,855
Computer and information sciences	2,388	3,402	4,756	5,652	7,201
Engineering	50,046	51,164	50,286	46,331	55,654
Technical/professional	368,713	400,668	441,499	455,229	470,739
Education	176,614	191,220	185,225	154,807	136,141
Business and other technical/professional [1]	192,099	209,448	256,274	300,422	334,598
Business and management	114,865	121,360	131,766	142,379	160,187
Other technical/professional [1]	77,234	88,088	124,508	158,043	174,411

Field of study	1980	1982	1984	1986	1988 [2]
Total	929,417	952,998	974,309	987,823	993,362
Humanities and social/behavioral sciences	281,592	276,138	266,912	266,558	285,530
Humanities	136,111	135,562	133,828	132,334	140,299
Social and behavioral sciences	145,481	140,576	133,084	134,224	145,231
Natural and computer sciences and engineering	161,205	177,562	202,138	214,403	193,764
Natural sciences	81,158	77,290	75,522	76,561	70,425
Life sciences	46,370	41,639	38,640	38,524	36,761
Physical sciences	23,410	24,052	23,671	21,731	17,776
Mathematics	11,378	11,599	13,211	16,306	15,888
Computer sciences and engineering	80,047	100,272	126,616	137,842	123,339
Computer and information sciences	11,154	20,267	32,172	41,889	34,548
Engineering	68,893	80,005	94,444	95,953	88,791
Technical/professional	486,620	499,298	505,259	506,862	512,267
Education	118,169	101,113	92,382	87,221	91,013
Business and other technical/professional [1]	368,451	398,185	412,877	419,641	421,254
Business and management	185,361	214,001	230,031	238,160	243,344
Other technical/professional [1]	183,090	184,184	182,846	181,481	177,910

[1] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

[2] Preliminary data. Total includes 1,801 degrees for which field of study is unknown.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:17

Table 2:17-2 Percent change in number of bachelor's degrees conferred since 1971, by field of study: Selected academic years ending 1972–1988

Field of study	1972	1974	1976	1978	1980	1982	1984	1986	1988 [2]
Total	5.7	12.6	10.2	9.7	10.7	13.5	16.0	17.6	18.3
Humanities and social/behavioral sciences	4.1	6.4	-2.9	-10.7	-16.3	-18.0	-20.7	-20.8	-15.2
Humanities	3.9	8.7	5.0	-0.2	-5.2	-5.5	-6.7	-7.8	-2.2
Social and behavioral sciences	4.1	4.7	-8.8	-18.5	-24.7	-27.2	-31.1	-30.5	-24.8
Natural and computer sciences and engineering	1.4	8.8	6.9	11.5	20.0	32.1	50.4	59.5	44.2
Natural sciences	-0.3	11.2	11.9	6.2	-1.0	-5.7	-7.9	-6.6	-14.1
Life sciences	4.3	35.2	51.8	44.1	29.7	16.5	8.1	7.8	2.8
Physical sciences	-3.1	-1.1	0.2	7.4	9.3	12.3	10.6	1.5	-17.0
Mathematics	-4.4	-12.8	-35.6	-49.3	-54.1	-53.2	-46.7	-34.3	-35.9
Computer sciences and engineering	4.1	5.0	-0.9	19.9	52.7	91.2	141.5	162.9	135.2
Computer and information sciences	42.5	99.2	136.7	201.5	367.1	748.7	1247.2	1654.1	1346.7
Engineering	2.2	0.5	-7.4	11.2	37.7	59.9	88.7	91.7	77.4
Technical/professional	8.7	19.7	23.5	27.7	32.0	35.4	37.0	37.5	38.9
Education	8.3	4.9	-12.3	-22.9	-33.1	-42.7	-47.7	-50.6	-48.5
Business and other technical/professional [1]	9.0	33.4	56.4	74.2	91.8	107.3	114.9	118.5	119.3
Business and management	5.7	14.7	24.0	39.5	61.4	86.3	100.3	107.3	111.9
Other technical/professional [1]	14.1	61.2	104.6	125.8	137.1	138.5	136.7	135.0	130.4

[1] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

[2] Preliminary.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:17

Table 2:17-3 Percentage distribution of bachelor's degrees conferred, by field of study: Selected academic years ending 1971–1988

Field of study	1971	1972	1974	1976	1978
Number	839,730	887,273	945,776	925,746	921,204
Total percent	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	40.1	39.5	37.9	35.3	32.6
Humanities	17.1	16.8	16.5	16.3	15.5
Social and behavioral sciences	23.0	22.7	21.4	19.0	17.1
Natural and computer sciences and engineering	16.0	15.4	15.5	15.5	16.3
Natural sciences	9.8	9.2	9.6	9.9	9.5
Life sciences	4.3	4.2	5.1	5.9	5.6
Physical sciences	2.5	2.3	2.2	2.3	2.5
Mathematics	3.0	2.7	2.3	1.7	1.4
Computer sciences and engineering	6.2	6.1	5.8	5.6	6.8
Computer and information sciences	0.3	0.4	0.5	0.6	0.8
Engineering	6.0	5.8	5.3	5.0	6.0
Technical/professional	43.9	45.2	46.7	49.2	51.1
Education	21.0	21.6	19.6	16.7	14.8
Business and other technical/professional [1]	22.9	23.6	27.1	32.5	36.3
Business and management	13.7	13.7	13.9	15.4	17.4
Other technical/professional [1]	9.2	9.9	13.2	17.1	18.9

Field of study	1980	1982	1984	1986	1988 [2]
Number	929,417	952,998	974,309	987,823	993,362
Total percent	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	30.3	29.0	27.4	27.0	28.7
Humanities	14.6	14.2	13.7	13.4	14.1
Social and behavioral sciences	15.7	14.8	13.7	13.6	14.6
Natural and computer sciences and engineering	17.3	18.6	20.7	21.7	19.5
Natural sciences	8.7	8.1	7.8	7.8	7.1
Life sciences	5.0	4.4	4.0	3.9	3.7
Physical sciences	2.5	2.5	2.4	2.2	1.8
Mathematics	1.2	1.2	1.4	1.7	1.6
Computer sciences and engineering	8.6	10.5	13.0	14.0	12.4
Computer and information sciences	1.2	2.1	3.3	4.2	3.5
Engineering	7.4	8.4	9.7	9.7	8.9
Technical/professional	52.4	52.4	51.9	51.3	51.6
Education	12.7	10.6	9.5	8.8	9.2
Business and other technical/professional [1]	39.6	41.8	42.4	42.5	42.4
Business and management	19.9	22.5	23.6	24.1	24.5
Other technical/professional [1]	19.7	19.3	18.8	18.4	17.9

[1] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

[2] Preliminary data. Degrees in unknown fields of study (.2 percent of total) included in total but not shown.

NOTE: Detail may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:18

Table 2:18-1 Number of master's degrees conferred, by field of study: Selected academic years ending 1971–1988

Field of study	1971	1974	1976	1978	1980
Total	230,509	277,033	311,771	311,620	298,081
Humanities and social/behavioral sciences	50,259	55,065	54,883	52,852	48,588
Humanities	29,352	31,228	31,248	30,114	28,681
Social and behavioral sciences	20,907	23,837	23,635	22,738	19,907
Natural and computer sciences and engineering	35,317	35,103	34,850	35,176	34,479
Natural sciences	17,286	17,448	15,905	15,740	14,589
Life sciences	5,728	6,552	6,582	6,806	6,510
Physical sciences	6,367	6,062	5,466	5,561	5,219
Mathematics	5,191	4,834	3,857	3,373	2,860
Computer sciences and engineering	18,031	17,655	18,945	19,436	19,890
Computer and information sciences	1,588	2,276	2,603	3,038	3,647
Engineering	16,443	15,379	16,342	16,398	16,243
Technical/professional	144,933	166,865	222,038	223,592	215,014
Education	88,952	112,610	128,417	119,038	103,951
Business and other technical/professional [1]	55,981	74,255	93,621	104,554	111,063
Business and management	26,481	32,644	42,512	48,326	55,006
Other technical/professional [1]	29,500	41,611	51,109	56,228	56,057

Field of study	1982	1984	1986	1988 [2]
Total	295,546	284,263	288,567	298,733
Humanities and social/behavioral sciences	47,861	46,046	45,964	45,315
Humanities	28,178	27,579	27,243	27,160
Social and behavioral sciences	19,683	18,467	18,721	18,155
Natural and computer sciences and engineering	36,989	40,574	43,805	46,511
Natural sciences	14,115	13,723	14,074	13,919
Life sciences	5,874	5,406	5,013	4,769
Physical sciences	5,514	5,576	5,902	5,727
Mathematics	2,727	2,741	3,159	3,423
Computer sciences and engineering	22,874	26,851	29,731	32,592
Computer and information sciences	4,935	6,190	8,070	9,166
Engineering	17,939	20,661	21,661	23,426
Technical/professional	210,696	197,643	198,798	202,763
Education	93,757	77,187	76,353	77,704
Business and other technical/professional [1]	116,939	120,456	122,445	125,059
Business and management	61,299	66,653	67,137	69,630
Other technical/professional [1]	55,640	53,803	55,308	55,429

[1] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

[2] Preliminary. Total includes 4,144 degrees (1.4 percent of total) for which field of study is unknown.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:18

Table 2:18-2 Percent change in number of master's degrees conferred since 1971, by field of study: Selected academic years ending 1974–1988

Field of study	1974	1976	1978	1980	1982	1984	1986	1988 [1]
Total	20.2	35.3	35.2	29.3	28.2	23.3	25.2	29.6
Humanities and social/behavioral sciences	9.6	9.2	5.2	-3.3	-4.8	-8.4	-8.5	-9.8
Humanities	6.4	6.5	2.6	-2.3	-4.0	-6.0	-7.2	-7.5
Social and behavioral sciences	14.0	13.0	8.8	-4.8	-5.9	-11.7	-10.5	-13.2
Natural and computer sciences and engineering	-0.6	-1.3	-0.4	-2.4	4.7	14.9	24.0	31.7
Natural sciences	0.9	-8.0	-8.9	-15.6	-18.3	-20.6	-18.6	-19.5
Life sciences	14.4	14.9	18.8	13.7	2.5	-5.6	-12.5	-16.7
Physical sciences	-4.8	-14.2	-12.7	-18.0	-13.4	-12.4	-7.3	-10.1
Mathematics	-6.9	-25.7	-35.0	-44.9	-47.5	-47.2	-39.1	-34.1
Computer sciences and engineering	-2.1	5.1	7.8	10.3	26.9	48.9	64.9	80.8
Computer and information sciences	43.3	63.9	91.3	129.7	210.8	289.8	408.2	477.2
Engineering	-6.5	-0.6	-0.3	-1.2	9.1	25.7	31.7	42.5
Technical/professional	28.9	53.2	54.3	48.4	45.4	36.4	37.2	39.9
Education	26.6	44.4	33.8	16.9	5.4	-13.2	-14.2	-12.6
Business and other technical/professional [2]	32.6	67.2	86.8	98.4	108.9	115.2	118.7	123.4
Business and management	23.3	60.5	82.5	107.7	131.5	151.7	153.5	162.9
Other technical/professional [2]	41.1	73.3	90.6	90.0	88.6	82.4	87.5	87.9

[1] Preliminary.

[2] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Table 2:18-3 Percentage distribution of master's degrees conferred, by field of study: Selected academic years ending 1971–1988

Field of study	1971	1974	1976	1978	1980	1982	1984	1986	1988 [1]
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	21.8	19.9	17.6	17.0	16.3	16.2	16.2	15.9	15.2
Humanities	12.7	11.3	10.0	9.7	9.6	9.5	9.7	9.4	9.1
Social and behavioral sciences	9.1	8.6	7.6	7.3	6.7	6.7	6.5	6.5	6.1
Natural and computer sciences and engineering	15.3	12.7	11.2	11.3	11.6	12.5	14.3	15.2	15.6
Natural sciences	7.5	6.3	5.1	5.1	4.9	4.8	4.8	4.9	4.7
Life sciences	2.5	2.4	2.1	2.2	2.2	2.0	1.9	1.7	1.6
Physical sciences	2.8	2.2	1.8	1.8	1.8	1.9	2.0	2.0	1.9
Mathematics	2.3	1.7	1.2	1.1	1.0	0.9	1.0	1.1	1.1
Computer sciences and engineering	7.8	6.4	6.1	6.2	6.7	7.7	9.4	10.3	10.9
Computer and information sciences	0.7	0.8	0.8	1.0	1.2	1.7	2.2	2.8	3.1
Engineering	7.1	5.6	5.2	5.3	5.4	6.1	7.3	7.5	7.8
Technical/professional	62.9	67.5	71.2	71.8	72.1	71.3	69.5	68.9	67.9
Education	38.6	40.6	41.2	38.2	34.9	31.7	27.2	26.5	26.0
Business and other technical/professional [2]	24.3	26.8	30.0	33.6	37.3	39.6	42.4	42.4	41.9
Business and management	11.5	11.8	13.6	15.5	18.5	20.7	23.4	23.3	23.3
Other technical/professional [2]	12.8	15.0	16.4	18.0	18.8	18.8	18.9	19.2	18.6

[1] Preliminary. Total includes 4,144 degrees (1.4 percent of total) for which field of study is unknown.

[2] Other technical/professional are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public services.

NOTE: Detail may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:19

Table 2:19-1 Number of doctor's degrees conferred, by field of study: Selected academic years ending 1971–1988

Field of study	1971	1974	1976	1978	1980	1982	1984	1986	1988 [1]
Total	32,107	33,816	34,064	32,131	32,615	32,707	33,209	33,653	34,839
Humanities and social/behavioral sciences	9,801	11,729	12,151	11,193	10,936	10,507	10,498	10,602	10,136
Humanities	4,360	5,270	5,416	5,023	4,949	4,666	4,614	4,559	4,365
Social and behavioral sciences	5,441	6,459	6,735	6,170	5,987	5,841	5,884	6,043	5,771
Natural and computer sciences and engineering	13,000	11,606	10,744	9,883	10,196	10,597	10,670	11,405	12,773
Natural sciences	9,234	8,096	7,679	7,247	7,449	7,710	7,438	7,651	8,154
Life sciences	3,645	3,439	3,392	3,309	3,636	3,743	3,437	3,358	3,598
Physical sciences	4,390	3,626	3,431	3,133	3,089	3,286	3,306	3,551	3,804
Mathematics	1,199	1,031	856	805	724	681	695	742	752
Computer sciences and engineering	3,766	3,510	3,065	2,636	2,747	2,887	3,232	3,754	4,619
Computer and information sciences	128	198	244	196	240	251	251	344	428
Engineering	3,638	3,312	2,821	2,440	2,507	2,636	2,981	3,410	4,191
Technical/professional	9,306	10,481	11,169	11,055	11,483	11,603	12,041	11,646	11,351
Education	6,403	7,293	7,778	7,595	7,941	7,680	7,473	7,110	6,544
Business and other technical/professional [2]	2,903	3,188	3,391	3,460	3,542	3,923	4,568	4,536	4,807
Business and management	807	981	953	866	792	855	977	969	1,109
Other technical/professional [2]	2,096	2,207	2,438	2,594	2,750	3,068	3,591	3,567	3,698

[1] Preliminary. Total includes 579 degrees (1.7 percent) for which field of study is unknown.

[2] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Table 2:19-2 Percent change in number of doctor's degrees conferred since 1971, by field of study: Selected academic years ending 1974–1988

Field of study	1974	1976	1978	1980	1982	1984	1986	1988 [1]
Total	5.3	6.1	0.1	1.6	1.9	3.4	4.8	8.5
Humanities and social/behavioral sciences	19.7	24.0	14.2	11.6	7.2	7.1	8.2	3.4
Humanities	20.9	24.2	15.2	13.5	7.0	5.8	4.6	0.1
Social and behavioral sciences	18.7	23.8	13.4	10.0	7.4	8.1	11.1	6.1
Natural and computer sciences and engineering	-10.7	-17.4	-24.0	-21.6	-18.5	-17.9	-12.3	-1.7
Natural sciences	-12.3	-16.8	-21.5	-19.3	-16.5	-19.4	-17.1	-11.7
Life sciences	-5.7	-6.9	-9.2	-0.2	2.7	-5.7	-7.9	-1.3
Physical sciences	-17.4	-21.8	-28.6	-29.6	-25.1	-24.7	-19.1	-13.3
Mathematics	-14.0	-28.6	-32.9	-39.6	-43.2	-42.0	-38.1	-37.3
Computer sciences and engineering	-6.8	-18.6	-30.0	-27.1	-23.3	-14.2	-0.3	22.7
Computer and information sciences	54.7	90.6	53.1	87.5	96.1	96.1	168.8	234.4
Engineering	-9.0	-22.5	-32.9	-31.1	-27.5	-18.1	-6.3	15.2
Technical/professional	12.6	20.0	18.8	23.4	24.7	29.4	25.1	22.0
Education	13.9	21.5	18.6	24.0	19.9	16.7	11.0	2.2
Business and other technical/professional [2]	9.8	16.8	19.2	22.0	35.1	57.4	56.3	65.6
Business and management	21.6	18.1	7.3	-1.9	5.9	21.1	20.1	37.4
Other technical/professional [2]	5.3	16.3	23.8	31.2	46.4	71.3	70.2	76.4

[1] Preliminary.

[2] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Table 2:19-3 Percentage distribution of doctor's degrees conferred, by field of study: Selected academic years ending 1971–1988

Field of study	1971	1974	1976	1978	1980	1982	1984	1986	1988 [1]
Number	32,107	33,816	34,064	32,131	32,615	32,707	33,209	33,653	34,839
Total percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Humanities and social/behavioral sciences	30.5	34.7	35.7	34.8	33.5	32.1	31.6	31.5	29.1
Humanities	13.6	15.6	15.9	15.6	15.2	14.3	13.9	13.5	12.5
Social and behavioral sciences	16.9	19.1	19.8	19.2	18.4	17.9	17.7	18.0	16.6
Natural and computer sciences and engineering	40.5	34.3	31.5	30.8	31.3	32.4	32.1	33.9	36.7
Natural sciences	28.8	23.9	22.5	22.6	22.8	23.6	22.4	22.7	23.4
Life sciences	11.4	10.2	10.0	10.3	11.1	11.4	10.3	10.0	10.3
Physical sciences	13.7	10.7	10.1	9.8	9.5	10.0	10.0	10.6	10.9
Mathematics	3.7	3.0	2.5	2.5	2.2	2.1	2.1	2.2	2.2
Computer sciences and engineering	11.7	10.4	9.0	8.2	8.4	8.8	9.7	11.2	13.3
Computer and information sciences	0.4	0.6	0.7	0.6	0.7	0.8	0.8	1.0	1.2
Engineering	11.3	9.8	8.3	7.6	7.7	8.1	9.0	10.1	12.0
Technical/professional	29.0	31.0	32.8	34.4	35.2	35.5	36.3	34.6	32.6
Education	19.9	21.6	22.8	23.6	24.3	23.5	22.5	21.1	18.8
Business and other technical/professional [2]	9.0	9.4	10.0	10.8	10.9	12.0	13.8	13.5	13.8
Business and management	2.5	2.9	2.8	2.7	2.4	2.6	2.9	2.9	3.2
Other technical/professional [2]	6.5	6.5	7.2	8.1	8.4	9.4	10.8	10.6	10.6

[1] Preliminary. Total includes 579 degrees (1.7 percent) for which field of study is unknown.

[2] Other technical/professional fields are: agriculture, architecture, communications, health sciences, home economics, law, library science, military science, parks and recreation, protective services, and public affairs.

NOTE: Detail may not add to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of degrees conferred, various years.

Indicator 2:20

Table 2:20-1 Percent of graduate degrees earned by foreign students, by degree level and field of study: Selected academic years ending 1977–1987

Degree level and field of study	1977	1979	1981	1985	1987
Master's degrees					
All fields	5.5	6.5	7.5	9.6	10.3
Humanities and social/behavioral sciences	5.6	6.2	7.8	9.9	10.4
Humanities	4.6	5.0	6.7	8.8	9.3
Social and behavioral sciences	6.9	7.9	9.4	11.4	12.2
Natural and computer sciences and engineering	15.6	18.1	20.7	23.7	24.1
Natural sciences	9.3	10.8	11.8	16.7	18.2
Life sciences	6.7	6.8	6.2	9.5	10.8
Physical sciences	12.4	13.1	15.0	19.4	19.9
Mathematics	10.0	15.6	18.1	24.2	26.5
Computer sciences and engineering	21.0	24.2	26.7	27.2	26.7
Computer and information sciences	13.4	15.6	21.8	24.6	26.1
Engineering	22.3	25.9	27.9	28.0	27.0
Technical/professional*	3.9	4.7	5.3	6.6	7.2
Education	1.9	2.5	2.7	3.8	3.2
Business and other technical/professional	6.5	7.1	7.5	8.3	9.6
Business and management	8.2	8.8	8.8	8.7	10.7
Other technical/professional	5.0	5.6	6.2	7.7	8.4
Doctor's degrees					
All fields	11.3	12.0	12.8	16.5	19.4
Humanities and social/behavioral sciences	7.4	7.8	8.4	11.0	11.8
Humanities	6.4	7.2	8.3	9.6	11.5
Social and behavioral sciences	8.1	8.4	8.4	12.1	12.0
Natural and computer sciences and engineering	18.6	18.9	19.3	25.6	31.1
Natural sciences	13.7	13.5	13.1	17.6	23.3
Life sciences	10.1	9.7	7.8	11.2	15.4
Physical sciences	15.9	15.7	16.9	20.2	26.6
Mathematics	19.4	22.2	23.8	36.3	44.0
Computer sciences and engineering	32.0	33.6	36.0	43.0	45.5
Computer and information sciences	20.8	20.3	20.6	29.2	33.7
Engineering	32.9	34.8	37.5	44.0	46.7
Technical/professional*	8.7	10.0	11.1	12.5	14.0
Education	4.8	6.4	7.5	8.5	8.5
Business and other technical/professional	18.4	17.8	18.6	18.9	22.3
Business and management	18.5	18.9	19.1	23.9	28.8
Other technical/professional	18.3	17.4	18.5	17.7	20.3

*The technical/professional category does not include computer sciences and engineering.

NOTE: Foreign students are non-United States citizens on temporary visas. American students include non-United States citizens with permanent U.S. visas. Because citizenship status was not imputed for some institutions that did not report such data, the sum of degrees reported in this table is lower than the total actually conferred.

SOURCE: U.S. Department of Education, National Center for Education Statistics, surveys of degrees conferred, various years.

Table 2:20-2 Number of graduate degrees earned by foreign and American students in 1987 and percent change between 1977 and 1987, by degree level and field of study

Degree level and field of study	Number of degrees earned in 1987		Percent change in number of degrees, 1977-1987	
	Foreign students	American students	Foreign students	American students
Master's degrees				
All fields	29,898	259,443	72.4	-13.0
Humanities and social/behavioral sciences	4,790	41,069	55.7	-20.2
Humanities	2,537	24,803	77.5	-15.5
Social and behavioral sciences	2,253	16,266	36.8	-26.4
Natural and computer sciences and engineering	10,861	34,177	100.8	16.7
Natural sciences	2,533	11,366	68.5	-22.1
Life sciences	536	4,414	12.4	-33.5
Physical sciences	1,118	4,512	70.4	-2.5
Mathematics	879	2,440	137.6	-26.6
Computer sciences and engineering	8,328	22,811	113.2	55.3
Computer and information sciences	2,217	6,264	505.7	165.6
Engineering	6,111	16,547	72.6	34.2
Technical/professional*	14,247	184,197	60.9	-15.3
Education	2,399	73,074	0.3	-41.1
Business and other technical/professional	11,848	111,123	83.4	18.7
Business and management	7,201	60,303	90.5	42.3
Other technical/professional	4,647	50,820	73.4	-0.8
Doctor's degrees				
All fields	6,587	27,446	75.8	-6.5
Humanities and social/behavioral sciences	1,235	9,236	44.1	-14.3
Humanities	519	3,981	59.2	-16.4
Social and behavioral sciences	716	5,255	34.8	-12.6
Natural and computer sciences and engineering	3,728	8,275	93.6	-1.8
Natural sciences	1,820	5,991	76.0	-8.2
Life sciences	527	2,890	54.1	-5.4
Physical sciences	975	2,696	83.3	-4.0
Mathematics	318	405	98.8	-38.9
Computer sciences and engineering	1,908	2,284	113.9	20.3
Computer and information sciences	126	248	180.0	45.0
Engineering	1,782	2,036	110.4	17.9
Technical/professional*	1,624	9,935	68.5	-2.3
Education	586	6,323	53.8	-16.5
Business and other technical/professional	1,038	3,612	78.0	39.5
Business and management	315	779	95.7	10.2
Other technical/professional	723	2,833	71.3	50.5

*The technical/professional category does not include computer sciences and engineering.

NOTE: See note to table 2:20-1.

SOURCE: U.S. Department of Education, National Center for Education Statistics, surveys of degrees conferred, various years.

Table 2:20-3 Number of degrees earned by foreign and American students and percent earned by foreign students, by degree level: Selected academic years ending 1977–1987

Degree level	1977	1979	1981	1985	1987
			Number earned		
Foreign students					
Bachelor's	15,703	17,831	22,589	29,217	29,306
Master's	17,338	19,405	22,057	26,952	29,898
Doctor's	3,747	3,915	4,203	5,317	6,587
American students					
Bachelor's	899,428	898,516	912,211	939,094	962,314
Master's	298,322	280,482	272,126	253,469	259,443
Doctor's	29,364	28,749	28,636	26,990	27,446
			Percent earned by foreign students		
Bachelor's	1.7	1.9	2.4	3.0	3.0
Master's	5.5	6.5	7.5	9.6	10.3
Doctor's	11.3	12.0	12.8	16.5	19.4

NOTE: Foreign students are non-United States citizens on temporary visas. American students include non-United States citizens with permananent U.S. visas. Because racial/ethnic citizenship status was not imputed for some institutions that did not report such data, the sum of degrees reported here is lower, but by no more than 2 percent, than the total actually conferred.

SOURCE: U.S. Department of Education, National Center for Education Statistics, surveys of degrees conferred, various years.

Indicator 2:20

Table 2:20-4 Percent of new foreign doctorate recipients who have definite postgraduation plans in the United States, by type of plan and major field: Academic years ending 1977–1987

Year of doctorate	Total [1]	Employment	Post-doctoral study
		Natural and computer sciences and engineering [2]	
1977	28.0	11.8	15.9
1978	31.5	12.4	19.1
1979	33.0	14.7	18.1
1980	34.2	15.8	18.1
1981	33.2	18.2	14.8
1982	32.7	17.9	14.6
1983	31.0	16.0	15.0
1984	33.3	15.6	17.6
1985	33.2	15.3	17.7
1986	37.1	15.5	21.5
1987	35.9	13.2	22.5
		All other fields	
1977	12.2	10.3	1.5
1978	14.4	12.6	1.7
1979	13.1	11.0	1.9
1980	11.8	8.9	2.8
1981	13.8	10.8	2.8
1982	12.0	9.6	2.4
1983	13.0	10.8	2.3
1984	12.7	10.1	2.5
1985	15.7	13.1	2.5
1986	18.4	15.0	3.2
1987	20.8	17.0	3.7

[1] Includes a small proportion (less than 1 percent) whose plans are unknown.

[2] Physical and life sciences, mathematics, computer and information sciences, and engineering.

NOTE: Foreign students are non-United States citizens holding temporary U.S. visas. Data for 1987 differ slightly from previously published figures.

SOURCE: National Science Foundation, *Science and Engineering Doctorates: 1960-88*, and unpublished tabulations from National Research Council, Survey of Earned Doctorates.

Indicator 2:21

Table 2:21-1 Total and full-time-equivalent (FTE) enrollment, by type and control of institution: Fall 1972–Fall 1988

Year	All institutions	Public, 4-year	Public, 2-year	Private, 4-year	Private, 2-year
			Total enrollment		
1972	9,214,860	4,429,696	2,640,939	2,028,978	115,247
1973	9,602,123	4,529,895	2,889,621	2,062,179	120,428
1974	10,223,729	4,703,018	3,285,482	2,116,717	118,512
1975	11,184,859	4,998,142	3,836,366	2,216,598	133,753
1976	11,012,137	4,901,691	3,751,786	2,227,125	131,535
1977	11,285,787	4,945,224	3,901,769	2,297,621	141,173
1978	11,260,092	4,912,203	3,873,690	2,319,748	154,451
1979	11,569,899	4,980,012	4,056,810	2,373,221	159,856
1980	12,096,895	5,128,612	4,328,782	2,441,996	197,505
1981	12,371,672	5,166,324	4,480,708	2,489,137	235,503
1982	12,425,780	5,176,434	4,519,653	2,477,640	252,053
1983	12,464,661	5,223,404	4,459,330	2,517,791	264,136
1984	12,241,940	5,198,273	4,279,097	2,512,894	251,676
1985	12,247,055	5,209,540	4,269,733	2,506,438	261,344
1986	12,504,501	5,300,580	4,414,129	2,523,922	265,870
1987*	12,766,642	5,432,200	4,541,054	2,558,220	235,168
1988*	13,043,124	5,543,991	4,612,390	2,631,021	255,722
			Full-time equivalent (FTE) enrollment		
1972	7,253,739	3,706,239	1,746,609	1,700,582	100,309
1973	7,453,448	3,721,031	1,908,524	1,718,187	105,706
1974	7,805,453	3,847,550	2,097,254	1,758,699	101,950
1975	8,479,685	4,056,500	2,465,810	1,843,901	113,474
1976	8,312,502	3,998,450	2,351,453	1,849,551	113,048
1977	8,415,339	4,039,071	2,357,405	1,896,005	122,858
1978	8,348,482	3,996,126	2,283,073	1,936,447	132,836
1979	8,487,317	4,059,304	2,333,313	1,956,768	137,932
1980	8,819,013	4,158,267	2,484,027	2,003,105	173,614
1981	9,014,521	4,208,506	2,572,794	2,041,341	191,880
1982	9,091,648	4,220,648	2,629,941	2,028,275	212,784
1983	9,166,399	4,265,808	2,615,672	2,059,415	225,504
1984	8,951,695	4,237,895	2,446,769	2,054,816	212,215
1985	8,943,433	4,239,622	2,428,159	2,054,717	220,935
1986	9,062,579	4,296,159	2,482,442	2,063,615	220,363
1987*	9,228,513	4,397,097	2,541,520	2,089,353	200,543
1988*	9,453,114	4,502,516	2,591,637	2,157,674	201,287

*Preliminary.

NOTE: Large increases in private 2-year institutions in 1980 and 1981 are due to the addition of schools accredited by the National Association of Trade and Technical Schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, HEGIS/IPEDS surveys of fall enrollment.

Table 2:21-2 Percent change since 1972 in total enrollment, by type and control of institution, and in population, by age: 1973–1988

	Enrollment				Population	
Year	All institutions	Public, 4-year	Public, 2-year	Private, 4-year	18-24	25-34
1973	4.2	2.3	9.4	1.6	2.1	4.8
1974	10.9	6.2	24.4	4.3	4.4	9.4
1975	21.4	12.8	45.3	9.2	7.4	13.9
1976	19.5	10.7	42.1	9.8	9.8	18.6
1977	22.5	11.6	47.7	13.2	11.9	23.1
1978	22.2	10.9	46.7	14.3	13.6	26.6
1979	25.6	12.4	53.6	17.0	15.2	31.1
1980	31.3	15.8	63.9	20.4	16.4	36.2
1981	34.3	16.6	69.7	22.7	16.7	41.8
1982	34.8	16.9	71.1	22.1	16.1	43.9
1983	35.3	17.9	68.9	24.1	14.8	47.0
1984	32.8	17.4	62.0	23.9	12.7	50.0
1985	32.9	17.6	61.7	23.5	10.2	52.9
1986	35.7	19.7	67.1	24.4	7.3	55.6
1987*	38.5	22.6	71.9	26.1	4.8	57.5
1988*	41.5	25.2	74.6	29.7	3.1	58.9

*Preliminary.

NOTE: Private 2-year institutions are not shown because changes are largely an artifact of a change in the survey universe in 1980 and 1981 to include schools accredited by the National Association of Trade and Technical Schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment. U.S., Department of Commerce, Bureau of the Census, *Current Population Reports*, United States Population Estimates, by Age, Sex, and Race, Series P-25, Nos. 917, 1000, 1022, and 1045.

Indicator 2:19

Table 2:21-3 Percent of total enrollment, by type and control of institution: Fall 1972–fall 1988

Year	Total	Public, 4-year	Public, 2-year	Private, 4-year	Private, 2-year
1972	100.0	48.1	28.7	22.0	1.3
1973	100.0	47.2	30.1	21.5	1.3
1974	100.0	46.0	32.1	20.7	1.2
1975	100.0	44.7	34.3	19.8	1.2
1976	100.0	44.5	34.1	20.2	1.2
1977	100.0	43.8	34.6	20.4	1.3
1978	100.0	43.6	34.4	20.6	1.4
1979	100.0	43.0	35.1	20.5	1.4
1980	100.0	42.4	35.8	20.2	1.6
1981	100.0	41.8	36.2	20.1	1.9
1982	100.0	41.7	36.4	19.9	2.0
1983	100.0	41.9	35.8	20.2	2.1
1984	100.0	42.5	35.0	20.5	2.1
1985	100.0	42.5	34.9	20.5	2.1
1986	100.0	42.4	35.3	20.2	2.1
1987*	100.0	42.5	35.6	20.0	1.8
1988*	100.0	42.5	35.4	20.2	2.0

*Preliminary.

NOTE: Increases in private 2-year institutions in 1980 and 1981 are due to the addition of schools accredited by the National Association of Trade and Technical Schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment.

Table 2:21-4 Total United States population, by age: 1972–1988

Year (July)	Ages 18-24	Ages 25-34
	(In thousands)	
1972	26,077	27,623
1973	26,635	28,939
1974	27,233	30,225
1975	28,006	31,471
1976	28,645	32,759
1977	29,173	33,998
1978	29,622	34,963
1979	30,048	36,203
1980	30,350	37,626
1981	30,428	39,159
1982	30,283	39,741
1983	29,943	40,602
1984	29,391	41,429
1985	28,749	42,237
1986	27,973	42,984
1987	27,337	43,517
1988	26,888	43,886

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-25, Nos. 917, 1000, 1022, and 1045, "United States Population Estimates, by Age, Sex, and Race . . ."

Indicator 2:22

Table 2:22-1 Attendance status and level of college students 16 to 34 years old: 1967–1988

Year	Percent enrolled part time			Percent graduate students		
	Total	Undergraduate	Graduate	Total	Full-time	Part-time
1967	22.3	17.5	49.0	15.0	9.9	33.1
1968	21.2	17.0	47.8	13.9	9.2	31.2
1969	21.9	17.2	47.9	15.3	10.2	33.5
1970	22.3	17.0	51.3	15.4	9.6	35.5
1971	23.3	19.0	48.4	14.7	9.9	30.6
1972	24.1	18.8	51.8	15.9	10.1	34.2
1973	25.6	19.7	54.5	16.9	10.4	36.1
1974	28.1	22.5	55.6	16.9	10.4	33.5
1975	26.7	22.4	49.1	16.4	11.4	30.1
1976	27.9	22.9	52.7	16.9	11.1	31.9
1977	29.6	24.9	51.0	17.7	12.3	30.6
1978	29.1	24.4	51.8	17.1	11.6	30.4
1979	29.8	24.9	53.5	17.0	11.2	30.5
1980	29.8	25.6	50.8	16.6	11.7	28.4
1981	29.5	25.6	50.7	15.7	10.9	26.9
1982	29.2	25.3	48.6	16.6	12.0	27.6
1983	28.8	25.3	45.9	16.8	12.7	26.8
1984	28.0	24.7	44.6	16.6	12.8	26.4
1985	29.0	24.8	50.7	16.1	11.2	28.2
1986	29.2	26.6	43.8	15.4	12.2	23.1
1987	30.8	27.5	48.3	15.5	11.6	24.3
1988	28.9	25.3	50.0	14.6	10.3	25.2

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, P-20 Series, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Table 2:22-2 Standard errors for estimated percentages in text table for indicator 2:22

	16- to 34-year-olds			16- to 24-year-olds			25- to 34-year-olds		
Year	Total	4-year	2-year	Total	4-year	2-year	Total	4-year	2-year
1973	0.7	0.7	1.6	0.6	0.6	1.7	2.1	3.0	2.9
1974	0.7	0.7	1.5	0.6	0.6	1.6	1.9	2.8	2.6
1975	0.7	0.7	1.4	0.6	0.6	1.5	1.7	2.6	2.5
1976	0.7	0.7	1.4	0.6	0.6	1.6	1.8	2.7	2.5
1977	0.7	0.7	1.4	0.6	0.6	1.6	1.7	2.5	2.3
1978	0.7	0.7	1.4	0.6	0.6	1.6	1.8	2.5	2.4
1979	0.7	0.7	1.4	0.6	0.6	1.6	1.7	2.4	2.5
1980	0.7	0.8	1.5	0.7	0.6	1.6	1.8	2.7	2.4
1981	0.7	0.7	1.4	0.6	0.6	1.5	1.5	2.4	2.5
1982	0.7	0.7	1.4	0.7	0.6	1.5	1.8	2.6	2.3
1983	0.7	0.7	1.4	0.7	0.6	1.6	1.7	2.5	2.3
1984	0.7	0.7	1.4	0.6	0.6	1.6	1.7	2.4	2.5
1985	0.7	0.7	1.4	0.6	0.6	1.6	1.7	2.4	2.4
1986	0.7	0.7	1.4	0.7	0.6	1.6	1.7	2.4	2.2
1987	0.7	0.7	1.4	0.7	0.6	1.6	1.7	2.4	2.3
1988	0.7	0.7	1.3	0.6	0.6	1.5	1.7	2.4	2.2

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, P-20 Series, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Table 2:22-3 Standard errors for estimated percentages in table 2:22-1

	Percent enrolled part time			Percent graduate students		
	Total	Undergraduate	Graduate	Total	Full-time	Part-time
1967	0.7	0.7	2.3	0.6	0.6	1.8
1968	0.7	0.7	2.3	0.6	0.6	1.7
1969	0.7	0.7	2.1	0.6	0.6	1.7
1970	0.7	0.7	2.1	0.6	0.5	1.7
1971	0.7	0.7	2.0	0.6	0.5	1.5
1972	0.7	0.7	1.9	0.6	0.5	1.5
1973	0.7	0.7	1.9	0.6	0.6	1.5
1974	0.7	0.7	1.8	0.6	0.5	1.3
1975	0.6	0.7	1.8	0.5	0.5	1.3
1976	0.6	0.7	1.7	0.5	0.5	1.3
1977	0.6	0.7	1.7	0.5	0.5	1.2
1978	0.6	0.7	1.7	0.5	0.5	1.2
1979	0.6	0.7	1.7	0.5	0.5	1.2
1980	0.7	0.7	1.8	0.6	0.6	1.2
1981	0.7	0.7	1.9	0.5	0.5	1.2
1982	0.7	0.7	1.8	0.5	0.6	1.2
1983	0.7	0.7	1.8	0.5	0.6	1.2
1984	0.7	0.7	1.8	0.5	0.6	1.2
1985	0.7	0.7	1.8	0.5	0.5	1.2
1986	0.7	0.7	1.9	0.5	0.6	1.2
1987	0.7	0.7	1.8	0.5	0.6	1.1
1988	0.7	0.7	1.9	0.5	0.5	1.2

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, P-20 Series, "School Enrollment . . .," various years, based on the October supplement to the Current Population Survey.

Indicator 2:23

Table 2:23-1 Total enrollment in institutions of higher education, by control and type of institution and race/ethnicity of student: Fall 1976–1988 (selected years)

(In thousands)

Control and type of institution, and race/ethnicity of student	1976	1978	1980	1982	1984	1986	1988
All institutions	10,986	11,231	12,087	12,388	12,235	12,504	13,043
White, non-Hispanic	9,076	9,194	9,833	9,997	9,815	9,921	10,283
Total minority	1,691	1,785	1,949	2,059	2,085	2,238	2,399
Black, non-Hispanic	1,033	1,054	1,107	1,101	1,076	1,082	1,130
Hispanic	384	417	472	519	535	618	680
Asian or Pacific Islander	198	235	286	351	390	448	497
American Indian/Alaskan Native	76	78	84	88	84	90	93
Nonresident alien	219	253	305	331	335	345	361
Public institutions	8,641	8,770	9,456	9,695	9,458	9,714	10,156
White, non-Hispanic	7,095	7,136	7,656	7,785	7,543	7,654	7,964
Total minority	1,401	1,466	1,596	1,692	1,696	1,836	1,955
Black, non-Hispanic	831	840	876	873	844	854	881
Hispanic	337	363	406	446	456	532	587
Asian or Pacific Islander	166	195	240	296	323	371	406
American Indian/Alaskan Native	68	68	74	77	72	79	81
Nonresident alien	145	167	204	219	219	224	238
Private institutions	2,345	2,461	2,630	2,693	2,777	2,790	2,887
White, non-Hispanic	1,982	2,058	2,177	2,212	2,272	2,267	2,319
Total minority	290	319	353	368	389	403	444
Black, non-Hispanic	202	215	231	228	232	228	248
Hispanic	47	55	66	74	79	86	93
Asian or Pacific Islander	32	40	47	55	67	77	91
American Indian/Alaskan Native	9	9	10	10	11	11	11
Nonresident alien	73	85	101	113	116	120	123

Table 2:23-1 Total enrollment in institutions of higher education, by control and type of institution and race/ethnicity of student: Fall 1976–1988 (selected years)—Continued

(In thousands)

Control and type of institution, and race/ethnicity of student	1976	1978	1980	1982	1984	1986	1988
4-year institutions	7,107	7,203	7,565	7,648	7,708	7,824	8,175
White, non-Hispanic	5,999	6,027	6,275	6,306	6,301	6,337	6,582
Total minority	931	975	1,050	1,073	1,124	1,195	1,292
Black, non-Hispanic	604	612	634	612	617	615	656
Hispanic	174	190	217	229	246	278	296
Asian or Pacific Islander	119	138	162	193	223	262	297
American Indian/Alaskan Native	35	35	37	39	38	40	42
Nonresident alien	177	201	241	270	282	292	302
2-year institutions	3,879	4,028	4,521	4,740	4,527	4,680	4,868
White, non-Hispanic	3,077	3,167	3,558	3,692	3,514	3,584	3,702
Total minority	760	810	899	987	961	1,043	1,107
Black, non-Hispanic	429	443	472	489	459	467	473
Hispanic	210	227	255	291	289	340	384
Asian or Pacific Islander	79	97	124	158	167	186	199
American Indian/Alaskan Native	41	43	47	49	46	51	50
Nonresident alien	42	52	64	61	53	53	60

NOTE: Because of underreporting and nonreporting of racial/ethnic data, figures are slightly lower than corresponding data in other tables. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment, various years.

Indicator 2:23

Table 2:23-2 Percentage distribution of total enrollment in institutions of higher education, by control and type of institution and race/ethnicity of student: Fall 1976–1988 (selected years)

Control and type of institution, and race/ethnicity of student	1976	1978	1980	1982	1984	1986	1988
All institutions	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White, non-Hispanic	82.6	81.9	81.4	80.7	80.2	79.3	78.8
Total minority	15.4	15.9	16.1	16.6	17.0	17.9	18.4
Black, non-Hispanic	9.4	9.4	9.2	8.9	8.8	8.7	8.7
Hispanic	3.5	3.7	3.9	4.2	4.4	4.9	5.2
Asian or Pacific Islander	1.8	2.1	2.4	2.8	3.2	3.6	3.8
American Indian/Alaskan Native	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Nonresident alien	2.0	2.2	2.5	2.7	2.7	2.8	2.8
Public institutions	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White, non-Hispanic	82.1	81.4	81.0	80.3	79.8	78.8	78.4
Total minority	16.2	16.7	16.9	17.4	17.9	18.9	19.2
Black, non-Hispanic	9.6	9.6	9.3	9.0	8.9	8.8	8.7
Hispanic	3.9	4.1	4.3	4.6	4.8	5.5	5.8
Asian or Pacific Islander	1.9	2.2	2.5	3.0	3.4	3.8	4.0
American Indian/Alaskan Native	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Nonresident alien	1.7	1.9	2.2	2.3	2.3	2.3	2.3
Private institutions	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White, non-Hispanic	84.5	83.6	82.8	82.2	81.8	81.3	80.3
Total minority	12.4	12.9	13.4	13.7	14.0	14.4	15.4
Black, non-Hispanic	8.6	8.7	8.8	8.5	8.3	8.2	8.6
Hispanic	2.0	2.2	2.5	2.7	2.8	3.1	3.2
Asian or Pacific Islander	1.4	1.6	1.8	2.1	2.4	2.8	3.2
American Indian/Alaskan Native	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Nonresident alien	3.1	3.4	3.8	4.2	4.2	4.3	4.3
4-year institutions	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White, non-Hispanic	84.4	83.7	82.9	82.4	81.7	81.0	80.5
Total minority	13.1	13.5	13.9	14.0	14.6	15.3	15.8
Black, non-Hispanic	8.5	8.5	8.4	8.0	8.0	7.9	8.0
Hispanic	2.4	2.6	2.9	3.0	3.2	3.6	3.6
Asian or Pacific Islander	1.7	1.9	2.1	2.5	2.9	3.3	3.6
American Indian/Alaskan Native	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Nonresident alien	2.5	2.8	3.2	3.5	3.7	3.7	3.7

Indicator 2:23

Table 2:23-2 Percentage distribution of total enrollment in institutions of higher education, by control and type of institution and race/ethnicity of student: Fall 1976–1988 (selected years)—Continued

Control and type of institution, and race/ethnicity of student	1976	1978	1980	1982	1984	1986	1988
2-year institutions	100.0	100.0	100.0	100.0	100.0	100.0	100.0
White, non-Hispanic	79.3	78.6	78.7	77.9	77.6	76.6	76.0
Total minority	19.6	20.1	19.9	20.8	21.2	22.3	22.7
Black, non-Hispanic	11.1	11.0	10.4	10.3	10.1	10.0	9.7
Hispanic	5.4	5.6	5.6	6.1	6.4	7.3	7.9
Asian or Pacific Islander	2.0	2.4	2.8	3.3	3.7	4.0	4.1
American Indian/Alaskan Native	1.1	1.1	1.0	1.0	1.0	1.1	1.0
Nonresident alien	1.1	1.3	1.4	1.3	1.2	1.1	1.2

NOTE: Because of underreporting and nonreporting of racial/ethnic data, figures are slightly lower than corresponding data in other tables. Because of rounding, details may not add to totals.

SOURCE: U.S. Department of Education, National Center for Education Statistics, IPEDS/HEGIS surveys of fall enrollment, various years.

Indicator 2:24

Table 2:24-1 Percent of postsecondary students enrolled in different types of institutions, by family income, parents' education, and region: Fall 1987

	Private, nonprofit				Public					Private, for profit	
		4-year		Lt		4-year			Lt		Lt
Student characteristics	All	PhD	no PhD	4-year	All	PhD	no PhD	2-year	2-year	All	4-year
Total	18.1	6.8	10.0	1.3	76.5	22.9	15.1	37.4	1.2	5.4	5.2
Family income status											
Lt $11,000	13.7	3.7	8.1	1.9	76.9	17.1	14.5	43.1	2.2	9.4	9.2
$11,000-16,999	15.5	4.9	9.0	1.5	77.0	19.8	16.3	39.1	1.7	7.5	7.3
$17,000-22,999	15.6	5.0	9.0	1.6	78.7	20.7	17.1	39.9	0.9	5.8	5.5
$23,000-29,999	16.8	5.6	10.0	1.1	78.5	24.7	16.4	36.7	0.8	4.7	4.4
$30,000-49,999	19.2	6.8	11.2	1.1	77.7	27.5	16.5	33.0	0.7	3.1	3.0
$50,000 and above	26.4	13.0	12.4	1.0	71.7	31.4	14.5	25.5	0.3	2.0	1.7
Dependent student's family income											
Lt $11,000	17.1	5.6	9.6	1.9	74.4	19.1	16.8	36.6	1.9	8.6	8.4
$11,000-16,999	17.8	6.3	9.3	2.2	74.6	22.2	17.9	32.8	1.7	7.6	7.3
$17,000-22,999	17.1	6.0	9.2	1.9	78.3	23.4	16.4	37.5	1.0	4.6	4.2
$23,000-29,999	19.8	7.1	11.4	1.4	75.6	26.4	16.5	32.1	0.6	4.6	4.3
$30,000-49,999	19.9	7.5	11.1	1.4	77.2	28.9	17.2	30.5	0.6	2.9	2.7
$50,000 and above	29.5	14.1	14.6	0.9	69.1	33.5	15.6	19.7	0.2	1.4	1.3
Independent student's income											
No income	10.4	3.4	6.2	0.9	83.5	14.0	11.6	55.1	2.8	6.0	5.8
$1-10,999	12.2	3.1	7.5	1.6	74.2	19.9	13.5	38.5	2.2	13.7	13.4
$11,000-16,999	10.9	2.9	6.6	1.4	79.3	14.3	11.6	51.4	2.0	9.7	9.6
$17,000-22,999	11.8	3.4	7.5	0.9	81.2	12.7	10.9	55.8	1.9	7.0	6.9
$23,000-29,999	12.6	3.5	7.5	1.5	82.6	12.3	10.9	58.4	1.0	4.8	4.6
$30,000 and above	13.6	4.5	8.4	0.8	83.9	12.9	12.8	57.1	1.1	2.4	2.2
Mother's education											
Less than HS	13.2	3.6	7.7	1.9	77.9	14.3	14.1	47.4	2.1	8.9	8.6
High school only	16.5	5.2	9.9	1.4	77.9	21.8	15.9	39.1	1.1	5.6	5.3
Voc tech/lt 2 yrs pse	16.6	5.9	9.6	1.1	79.4	24.2	15.8	38.5	0.9	4.0	3.8
AA/gt 2 yrs pse	18.5	7.1	10.4	1.0	78.2	24.7	16.1	36.7	0.7	3.4	3.3
BA or BS	23.6	10.3	12.3	0.9	74.1	32.1	15.7	25.8	0.4	2.4	2.2
Advanced degree	30.4	15.6	13.7	1.2	68.0	33.2	13.8	20.6	0.4	1.6	1.5
Father's education											
Less than HS	12.8	3.4	7.5	1.9	78.4	13.1	14.1	49.2	2.0	8.9	8.7
High school only	16.6	4.9	10.3	1.5	77.4	21.7	15.7	38.9	1.2	6.0	5.7
Voc tech/lt 2 yrs pse	15.4	5.3	8.8	1.2	80.5	22.9	16.4	40.3	0.9	4.1	3.8
AA/gt 2 yrs pse	19.4	7.4	10.9	1.1	77.6	26.7	15.6	34.6	0.8	3.1	2.9
BA or BS	24.4	10.7	12.6	1.1	73.0	32.7	15.1	24.8	0.5	2.6	2.4
Advanced degree	29.3	15.8	12.6	0.9	69.4	33.7	14.2	21.2	0.3	1.3	1.2
Geographic region											
Northeast	32.7	14.4	16.5	1.8	61.2	11.6	24.2	25.1	0.2	6.1	5.9
Midwest	17.5	4.6	11.7	1.2	78.0	32.6	11.0	33.8	0.7	4.5	3.7
South	13.1	4.2	8.0	1.0	81.6	27.1	9.9	42.9	1.8	5.2	5.2
West	7.9	4.1	2.7	1.2	86.1	19.2	14.9	50.9	1.0	6.0	5.9

NOTE: Lt is an abbreviation for "less than"; gt for "greater than"; and pse for "postsecondary education."

SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1986–87 National Postsecondary Student Aid Study, Updated Record and Student Questionnaire Data File, CS 89-312m.

Table 2:24-2 Distribution of student's family income and father's education, by type of institution: Fall 1987

	Private, nonprofit			Public				Private, for profit
	4-year		Lt	4-year			Lt	Lt
	PhD	no PhD	4-year	PhD	no PhD	2-year	2-year	4-year
Family income status								
Lt $11,000	6.9	10.6	19.9	9.3	12.5	17.0	31.3	28.0
$11,000-16,999	7.1	9.1	12.5	8.3	10.9	11.9	19.4	17.1
$17,000-22,999	8.1	10.2	14.2	9.7	12.7	13.6	11.7	14.5
$23,000-29,999	10.7	13.4	12.2	13.7	14.4	14.7	11.1	13.6
$30,000-49,999	25.4	29.1	23.5	29.6	28.2	25.7	20.2	17.8
$50,000 and above	41.8	27.7	17.6	29.3	21.4	17.2	6.4	9.0
Father's education								
Less than HS	8.2	12.3	23.9	9.3	15.6	22.7	32.0	31.1
High school only	23.4	33.4	36.1	30.4	34.2	38.5	38.1	40.5
Voc tech/lt 2 yrs pse	12.2	13.7	14.1	15.2	17.0	17.4	14.5	12.9
AA/gt 2 yrs pse	8.8	8.8	6.5	9.2	8.4	7.8	6.0	5.1
BA or BS	23.8	19.0	12.3	21.1	15.2	10.4	6.7	7.9
Advanced degree	23.7	12.8	7.2	14.7	9.7	6.1	2.7	2.6

NOTE: Lt is an abbreviation for "less than"; gt for "greater than"; and pse for "postsecondary education."

SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1986–87 National Postsecondary Student Aid Study, Updated Record and Student Questionnaire Data File, CS 89-312m.

Table 2:24-3 Standard errors of estimated percentages in table 2:24-1

	Private, nonprofit				Public					Private, for profit	
		4-year		Lt		4-year			Lt		Lt
Student characteristics	All	PhD	no PhD	4-year	All	PhD	no PhD	2-year	2-year	All	4-year
Total	1.3	0.5	1.1	0.2	1.3	1.6	1.2	2.0	0.3	0.5	0.5
Family income status											
Lt $11,000	1.4	0.4	1.1	0.5	1.7	1.6	1.4	2.7	0.7	1.1	1.1
$11,000-16,999	1.3	0.5	1.1	0.3	1.3	1.8	1.5	2.6	0.6	0.8	0.8
$17,000-22,999	1.2	0.5	1.1	0.4	1.2	1.8	1.5	2.2	0.3	0.6	0.6
$23,000-29,999	1.5	0.5	1.2	0.2	1.6	1.9	1.6	2.3	0.3	0.6	0.5
$30,000-49,999	1.5	0.4	1.4	0.2	1.6	1.8	1.4	2.0	0.2	0.3	0.3
$50,000 and above	2.0	1.3	1.5	0.2	1.9	2.1	1.4	2.5	0.1	0.2	0.2
Dependent student's family income											
Lt $11,000	1.5	0.6	1.3	0.4	1.5	1.9	1.6	2.4	0.7	0.9	0.9
$11,000-16,999	1.7	0.7	1.2	0.6	1.7	2.3	2.0	2.3	0.5	1.1	1.0
$17,000-22,999	1.4	0.6	1.1	0.7	1.5	2.2	1.5	2.7	0.4	0.5	0.5
$23,000-29,999	1.7	0.7	1.5	0.3	1.8	1.8	1.6	2.2	0.2	0.6	0.7
$30,000-49,999	1.6	0.7	1.3	0.2	1.6	1.9	1.4	1.9	0.2	0.3	0.3
$50,000 and above	2.0	1.3	1.7	0.2	2.0	2.2	1.6	1.8	0.1	0.2	0.2
Independent student's income											
No income	1.0	0.4	0.8	0.2	1.2	1.8	1.5	3.0	0.8	1.0	1.0
$1-10,999	1.4	0.4	1.2	0.4	2.0	1.7	1.2	2.9	0.8	1.4	1.4
$11,000-16,999	1.3	0.4	1.1	0.4	1.8	1.5	1.3	2.8	0.6	1.4	1.4
$17,000-22,999	1.3	0.3	1.1	0.2	1.8	1.8	1.4	3.3	0.5	0.8	0.8
$23,000-29,999	1.4	0.4	1.1	0.4	1.6	1.2	1.3	2.5	0.4	0.5	0.5
$30,000 and above	1.4	0.6	1.2	0.2	1.5	1.5	1.5	3.0	0.3	0.4	0.4
Mother's education											
Less than HS	1.3	0.4	1.1	0.5	1.4	1.3	1.5	2.5	0.6	1.0	1.0
High school only	1.3	0.3	1.2	0.3	1.3	1.7	1.3	2.2	0.3	0.5	0.5
Voc tech/lt 2 yrs pse	1.4	0.4	1.2	0.2	1.3	1.7	1.5	2.4	0.3	0.4	0.4
AA/gt 2 yrs pse	1.7	0.7	1.3	0.2	1.6	2.0	1.4	2.5	0.2	0.4	0.4
BA or BS	1.7	1.0	1.4	0.2	1.8	2.1	1.4	1.9	0.2	0.3	0.3
Advanced degree	2.5	1.8	1.8	0.3	2.5	2.4	1.4	1.8	0.3	0.2	0.2
Father's education											
Less than HS	1.3	0.4	1.1	0.6	1.6	1.3	1.4	2.6	0.6	1.1	1.1
High school only	1.3	0.3	1.2	0.3	1.4	1.6	1.3	2.2	0.3	0.5	0.5
Voc tech/lt 2 yrs pse	1.2	0.3	1.0	0.2	1.3	1.8	1.4	2.5	0.3	0.3	0.3
AA/gt 2 yrs pse	1.5	0.7	1.4	0.2	1.5	1.8	1.6	2.5	0.3	0.4	0.4
BA or BS	2.0	1.1	1.6	0.2	2.0	2.1	1.4	1.6	0.2	0.4	0.4
Advanced degree	2.4	1.9	1.6	0.2	2.4	2.5	1.3	1.7	0.1	0.2	0.2
Geographic region											
Northeast	2.7	2.1	1.8	0.4	2.8	2.6	3.5	3.4	0.1	0.6	0.9
Midwest	3.4	0.7	3.0	0.5	3.8	4.6	1.2	3.6	0.3	0.9	0.8
South	1.5	0.9	1.5	0.4	1.6	3.2	2.3	4.0	0.7	1.1	1.1
West	1.7	1.0	1.1	0.6	1.6	3.4	2.5	4.0	0.6	1.4	1.5

NOTE: Lt is an abbreviation for "less than"; gt for "greater than"; and pse for "postsecondary education."

SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1986–87 National Postsecondary Student Aid Study, Updated Record and Student Questionnaire Data File, CS 89-312m.

Table 2:24-4 Standard errors for estimated percentages in table 2:24-2

	Private, nonprofit			Public				Private, for profit
	4-year		Lt	4-year			Lt	Lt
	PhD	no PhD	4-year	PhD	no PhD	2-year	2-year	4-year
Family income status								
Lt $11,000	0.6	0.8	3.3	0.5	0.9	0.9	3.9	1.9
$11,000-16,999	0.5	0.6	1.3	0.4	0.5	0.6	2.2	0.8
$17,000-22,999	0.5	0.5	2.0	0.4	0.5	0.6	1.5	0.9
$23,000-29,999	0.6	0.6	1.4	0.4	0.5	0.7	1.9	0.8
$30,000-49,999	0.8	1.1	2.6	0.6	1.0	0.9	3.0	1.2
$50,000 and above	1.6	1.6	3.1	0.8	0.9	1.2	2.0	0.8
Father's education								
Less than HS	0.8	1.1	4.1	0.5	0.9	4.1	2.5	1.9
High school only	1.1	1.2	1.5	0.6	0.9	1.8	3.8	1.5
Voc tech/lt 2 yrs pse	0.6	0.6	1.3	0.4	0.5	1.3	2.0	0.8
AA/gt 2 yrs pse	0.6	0.4	1.0	0.4	0.5	1.0	2.1	0.5
BA or BS	0.9	0.9	1.8	0.6	0.9	1.8	1.8	0.7
Advanced degree	1.5	1.1	1.5	0.6	0.5	1.5	1.0	0.3

NOTE: Lt is an abbreviation for "less than"; gt for "greater than"; and pse for "postsecondary education."

SOURCE: U.S. Department of Education, National Center for Education Statistics, The 1986–87 National Postsecondary Student Aid Study, Updated Record and Student Questionnaire Data File, CS 89-312m.

Indicator 2:25

Table 2:25-1 Percent of *full-time* college students ages 16-24 who were employed, by sex: 1970–1989

Year	Male employed			Female employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	33.1	5.7	27.4	33.4	2.4	31.0
1971	35.3	6.2	29.1	30.5	1.5	29.0
1972	36.2	6.5	29.7	31.2	1.8	29.5
1973	38.3	7.0	31.3	32.6	3.2	29.4
1974	36.4	6.6	29.7	35.5	3.6	31.9
1975	32.8	6.4	26.4	35.8	4.1	31.7
1976	37.8	6.0	31.8	35.4	3.5	31.9
1977	37.2	6.8	30.5	38.6	2.8	35.8
1978	38.5	6.8	31.7	39.6	4.0	35.5
1979	35.8	5.4	30.3	39.2	4.1	35.1
1980	37.9	5.0	32.9	40.2	3.7	36.5
1981	37.2	5.3	31.9	40.1	4.9	35.2
1982	37.8	4.1	33.8	40.7	3.4	37.3
1983	38.7	5.2	33.5	40.7	3.5	37.2
1984	39.6	6.2	33.4	43.5	3.9	39.6
1985	41.2	5.9	35.3	45.8	4.6	41.2
1986	41.9	5.1	36.8	42.8	4.8	38.0
1987	43.6	6.3	37.3	45.2	4.6	40.6
1988	44.4	6.6	37.8	48.1	5.2	42.9
1989	40.8	8.4	32.4	45.8	5.9	39.9

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Table 2:25-2 Percent of *full-time* colleges students ages 16-24 who were employed, by race: 1970–1989

Year	White employed			Black employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	34.3	4.6	29.8	22.0	2.1	19.8
1971	35.0	4.3	30.8	18.9	3.5	15.3
1972	35.4	4.3	31.1	22.3	6.0	16.3
1973	36.9	5.2	31.8	26.9	6.6	20.4
1974	37.5	5.4	32.1	24.2	4.4	19.8
1975	35.4	5.3	30.1	25.9	5.6	20.3
1976	38.3	4.3	34.0	24.9	7.2	17.7
1977	39.7	4.7	35.0	24.4	5.9	18.5
1978	41.3	5.6	35.7	25.7	5.2	20.5
1979	39.2	4.8	34.4	25.1	6.2	18.9
1980	41.2	4.3	36.8	23.8	5.8	18.0
1981	40.7	5.2	35.5	23.4	4.8	18.6
1982	41.1	3.6	37.6	26.0	5.1	21.0
1983	41.6	4.6	37.0	27.8	2.8	25.0
1984	43.5	5.1	38.4	25.2	4.8	20.3
1985	46.4	5.3	41.1	24.2	5.7	18.5
1986	45.1	5.1	40.0	25.0	5.0	19.9
1987	46.0	5.5	40.5	33.4	5.1	28.3
1988	48.2	6.3	41.9	32.3	5.0	27.3
1989	45.7	7.4	38.3	29.0	4.4	24.7

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Table 2:25-3 Percent of *part-time* college students ages 16-24 who were employed, by sex: 1970–1989

Year	Male employed			Female employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	86.4	73.3	13.1	77.0	62.6	14.4
1971	87.3	70.6	16.7	76.2	58.2	18.0
1972	87.5	70.2	17.3	76.7	58.6	18.1
1973	85.2	66.3	18.9	83.8	62.8	21.0
1974	86.5	69.9	16.6	80.9	62.9	18.0
1975	81.8	63.2	18.6	78.8	57.8	21.0
1976	83.3	63.3	20.0	84.7	60.0	24.6
1977	84.9	64.9	20.0	80.7	58.5	22.2
1978	87.1	68.3	18.8	83.2	55.7	27.5
1979	90.6	71.4	19.2	83.6	61.8	21.9
1980	84.7	62.6	22.1	83.7	60.4	23.3
1981	87.4	63.2	24.1	83.0	58.2	24.9
1982	78.3	55.3	23.0	81.8	54.8	27.0
1983	81.8	56.3	25.5	79.7	54.0	25.6
1984	86.9	61.5	25.4	79.6	59.5	20.1
1985	84.2	55.5	28.8	84.8	57.2	27.6
1986	86.8	64.0	22.7	74.8	49.2	25.6
1987	90.0	59.6	30.4	88.6	61.9	26.7
1988	87.3	59.8	27.5	89.5	63.4	26.1
1989	85.2	59.8	25.3	85.2	56.2	29.0

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Table 2:25-4 Percent of *part-time* college students ages 16-24 who were employed, by race: 1970–1989

Year	White employed			Black employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	82.5	68.1	14.4	72.1	67.2	4.9
1971	83.3	65.9	17.3	80.0	61.2	18.8
1972	84.3	66.3	17.9	68.5	53.2	15.3
1973	87.4	66.7	20.7	71.1	54.4	16.7
1974	84.8	66.5	18.4	77.2	66.7	10.5
1975	80.8	61.6	19.3	74.8	50.4	24.4
1976	84.8	61.6	23.2	76.3	61.4	14.9
1977	84.4	63.2	21.2	68.8	50.6	18.2
1978	86.2	63.6	22.6	74.2	44.2	30.0
1979	87.9	67.4	20.6	73.8	57.3	16.5
1980	85.4	63.1	22.2	72.9	48.6	24.3
1981	86.2	61.8	24.3	75.6	44.5	31.1
1982	83.0	56.9	26.0	63.3	42.4	20.9
1983	84.2	58.5	25.7	50.0	30.5	19.5
1984	85.3	63.1	22.2	64.4	46.3	18.1
1985	86.0	58.0	28.0	71.3	47.8	23.5
1986	87.9	61.2	26.6	76.2	49.2	27.0
1987	90.3	62.3	28.0	80.4	51.7	28.7
1988	90.0	63.4	26.6	75.2	53.1	22.1
1989	88.3	60.7	27.5	64.4	41.1	23.3

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Indicator 2:25

Table 2:25-5 Standard errors for estimated percentages in table 2:25-1

Year	Male employed			Female employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	1.2	0.6	1.1	1.4	0.5	1.4
1971	1.2	0.6	1.1	1.3	0.4	1.3
1972	1.2	0.6	1.1	1.3	0.4	1.3
1973	1.2	0.7	1.2	1.3	0.5	1.3
1974	1.2	0.6	1.2	1.3	0.5	1.3
1975	1.2	0.6	1.1	1.3	0.5	1.2
1976	1.2	0.6	1.2	1.2	0.5	1.2
1977	1.2	0.6	1.1	1.3	0.4	1.2
1978	1.2	0.6	1.2	1.3	0.5	1.3
1979	1.2	0.6	1.2	1.3	0.5	1.2
1980	1.2	0.5	1.2	1.2	0.5	1.2
1981	1.2	0.6	1.1	1.2	0.5	1.2
1982	1.2	0.5	1.2	1.2	0.5	1.2
1983	1.2	0.5	1.2	1.2	0.5	1.2
1984	1.2	0.6	1.1	1.3	0.5	1.2
1985	1.2	0.6	1.2	1.2	0.5	1.2
1986	1.2	0.6	1.2	1.2	0.5	1.2
1987	1.2	0.6	1.2	1.3	0.5	1.2
1988	1.2	0.6	1.2	1.2	0.5	1.2
1989	1.2	0.7	1.2	1.2	0.6	1.2

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Indicator 2:25

Table 2:25-6 Standard errors for estimated percentages in table 2:25-2

Year	White employed			Black employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	1.0	0.4	0.9	2.9	1.0	2.8
1971	1.0	0.4	0.9	2.5	1.2	2.3
1972	0.9	0.4	0.9	2.6	1.5	2.3
1973	1.0	0.4	0.9	2.8	1.5	2.5
1974	1.0	0.5	0.9	2.5	1.2	2.3
1975	0.9	0.4	0.9	2.4	1.3	2.2
1976	0.9	0.4	0.9	2.2	1.3	2.0
1977	0.9	0.4	0.9	2.2	1.2	2.0
1978	1.0	0.4	0.9	2.2	1.1	2.1
1979	0.9	0.4	0.9	2.5	1.4	2.3
1980	0.9	0.4	0.9	2.5	1.4	2.3
1981	0.9	0.4	0.9	2.5	1.3	2.3
1982	0.9	0.4	0.9	2.6	1.3	2.4
1983	0.9	0.4	0.9	2.6	1.0	2.6
1984	0.9	0.4	0.9	2.5	1.2	2.3
1985	0.9	0.4	0.9	2.6	1.4	2.4
1986	1.0	0.4	0.9	2.5	1.2	2.3
1987	1.0	0.4	0.9	2.7	1.3	2.6
1988	0.9	0.5	0.9	2.7	1.3	2.6
1989	1.0	0.5	0.9	2.5	1.1	2.4

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Table 2:25-7 Standard errors for estimated percentages in table 2:25-3

Year	Male employed			Female employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	2.5	3.2	2.4	2.9	3.3	2.4
1971	2.1	2.9	2.4	2.9	3.4	2.6
1972	2.1	3.0	2.5	2.8	3.3	2.6
1973	2.3	3.1	2.6	2.4	3.2	2.7
1974	2.1	2.8	2.3	2.3	2.9	2.3
1975	2.3	2.8	2.3	2.4	2.9	2.4
1976	2.2	2.9	2.4	2.0	2.7	2.4
1977	2.0	2.7	2.2	2.2	2.7	2.3
1978	1.9	2.7	2.3	2.1	2.7	2.5
1979	1.7	2.7	2.3	2.0	2.7	2.3
1980	2.2	2.9	2.5	1.9	2.6	2.2
1981	1.9	2.8	2.5	2.0	2.6	2.3
1982	2.4	2.8	2.4	2.0	2.5	2.3
1983	2.2	2.8	2.5	2.2	2.8	2.4
1984	2.0	2.9	2.6	2.2	2.7	2.2
1985	2.2	3.0	2.8	1.9	2.7	2.4
1986	2.0	2.9	2.5	2.2	2.5	2.2
1987	1.7	2.8	2.6	1.6	2.5	2.3
1988	1.9	2.7	2.5	1.6	2.5	2.3
1989	2.2	3.1	2.7	2.0	2.9	2.6

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Table 2:25-8 Standard errors for estimated percentages in table 2:25-4

Year	White employed			Black employed		
	Total	Full time*	Part time	Total	Full time*	Part time
1970	2.0	2.4	1.8	8.6	9.0	4.2
1971	1.8	2.3	1.9	6.5	7.9	6.4
1972	1.8	2.4	1.9	6.6	7.1	5.1
1973	1.6	2.3	2.0	7.2	7.9	5.9
1974	1.6	2.1	1.7	5.9	6.6	4.3
1975	1.7	2.1	1.7	5.8	6.7	5.7
1976	1.5	2.1	1.8	6.0	6.8	5.0
1977	1.5	2.0	1.7	5.3	5.6	4.4
1978	1.5	2.0	1.8	6.0	6.8	6.3
1979	1.4	2.0	1.7	6.5	7.3	5.5
1980	1.5	2.0	1.8	6.4	7.2	6.2
1981	1.5	2.0	1.8	5.9	6.8	6.4
1982	1.5	2.0	1.8	6.1	6.3	5.2
1983	1.6	2.1	1.9	6.6	6.1	5.3
1984	1.5	2.1	1.8	5.7	5.9	4.6
1985	1.5	2.2	2.0	5.8	6.4	5.5
1986	1.4	2.1	1.9	5.8	6.8	6.0
1987	1.2	2.0	1.9	5.0	6.3	5.7
1988	1.2	2.0	1.8	6.1	7.0	5.9
1989	1.5	2.3	2.1	5.9	6.1	5.2

* 35 or more hours per week.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Labor Force Statistics Derived from the Current Population Survey: 1940–1987*, and unpublished tabulations.

Indicator 2:26

Table 2:26-1 Higher education revenues and expenditures as a percent of Gross National Product (GNP): Academic years ending 1960–1988

Year	Current-fund revenues/ GNP	Total expenditures/ GNP	Current-fund expenditures/ GNP
1960	—	1.4	—
1961	—	—	—
1962	—	1.6	—
1963	—	—	—
1964	—	1.8	—
1965	—	—	—
1966	—	2.1	—
1967	—	—	—
1968	—	2.4	—
1969	—	—	—
1970	—	2.6	—
1971	—	2.6	2.2
1972	—	2.6	2.2
1973	—	2.5	2.2
1974	—	2.5	2.2
1975	—	2.6	2.3
1976	2.2	2.6	2.3
1977	—	2.5	2.3
1978	2.2	2.4	2.2
1979	—	2.3	2.1
1980	2.2	2.4	2.2
1981	2.3	2.4	2.2
1982	2.3	2.5	2.3
1983	2.4	2.6	2.3
1984	2.3	2.5	2.3
1985	2.4	2.5	2.3
1986	2.4	2.6	2.4
1987*	2.4	2.7	2.4
1988*	2.4	2.6	2.3

— Not available.

* Preliminary estimates.

NOTE: Total expenditures include current-fund expenditures and additions to plant value.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1989*, tables 25, 269, 277; and "Early Estimates, National Estimates of Higher Education: School Year 1988–89," December 1988.

Indicator 2:26

Table 2:26-2 Higher education expenditures per student in 1989 dollars, by control of institution, and as a fraction of GNP/capita: Academic years ending 1971–1988

	Current-fund expenditures per full-time-equivalent student (in 1989 dollars)			Current-fund expenditures per student/ GNP per capita	Current-fund expenditures per FTE student/ GNP per capita
	All	Public	Private	All	All
1971	$11,109	$9,695	$15,035	0.53	0.67
1972	11,033	9,517	15,521	0.52	0.65
1973	11,448	9,916	16,085	0.50	0.63
1974	11,242	9,855	15,522	0.48	0.62
1975	11,023	9,698	15,259	0.48	0.63
1976	10,509	9,196	14,884	0.44	0.58
1977	11,099	9,767	15,411	0.45	0.60
1978	11,094	9,755	15,336	0.43	0.57
1979	11,276	9,970	15,236	0.42	0.57
1980	10,986	9,679	14,974	0.42	0.58
1981	10,662	9,344	14,684	0.42	0.57
1982	10,542	9,087	14,592	0.42	0.58
1983	10,813	9,368	15,229	0.44	0.60
1984	11,171	9,634	15,799	0.43	0.58
1985	12,074	10,482	16,769	0.45	0.61
1986	12,743	11,074	17,634	0.46	0.63
1987*	13,071	11,199	18,627	0.46	0.63
1988*	13,051	11,122	18,896	0.45	0.62

— Not available.

* Preliminary estimates.

NOTE: Current-fund expenditures exclude additions to plant value.

The two right-most columns of this table are indices of the national investment made in the education of college students in relation to the Nation's ability to pay. These indices represent a refinement of the percent of GNP devoted to education as a measure of fiscal resources going to education reported in indicator 2:26. The numerator is expenditures per student or alternatively per full-time-equivalent student. The denominator is GNP per capita, a measure of the typical taxpayer's ability to pay. Therefore, the index reflects what is spent on the typical student relative to the typical taxpayer's ability to pay.

Four factors make up this index: 1) the number of students enrolled in colleges and universities, or alternatively the number of full-time-equivalent students; 2) current expenditures of colleges and universities; 3) gross national product; and 4) the total population. The index is the ratio of higher education expenditures per student to GNP per capita.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1989*, tables 33, 148, 162, 277; and "Early Estimates, National Estimates of Higher Education: School Year 1988–89," December 1988.

Indicator 2:27

Table 2:27-1 Average undergraduate tuition charges and current-fund expenditures per full-time-equivalent student, by control of institution: Academic years ending 1971–1988

(In constant 1989 dollars)

Year	Public		Private	
	Tuition charges	Expenditures[1]	Tuition charges	Expenditures[1]
1971	$1,124	$9,695	$5,393	$15,035
1972	1,160	9,517	5,616	15,521
1973	1,209	9,916	5,638	16,085
1974	1,195	9,855	5,426	15,522
1975	1,060	9,698	5,196	15,259
1976	992	9,196	5,204	14,884
1977	1,037	9,767	5,343	15,411
1978	1,040	9,755	5,329	15,336
1979	1,008	9,970	5,321	15,236
1980	955	9,679	5,128	14,974
1981	929	9,344	5,135	14,684
1982	974	9,087	5,366	14,592
1983	1,033	9,368	5,747	15,229
1984	1,113	9,634	6,058	15,799
1985	1,167	10,482	6,385	16,769
1986	1,220	11,074	6,751	17,634
1987[2]	1,264	11,199	7,221	18,627
1988[2]	1,273	11,122	7,487	18,896

[1] Current-fund expenditures, which exclude capital outlays.

[2] Preliminary.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1989*, tables 34, 162, 258, 277 and "Early Estimates, National Estimates of Higher Education: School Year 1988–89," December 1988.

Indicator 2:28

Table 2:28-1 Percent of new doctorate recipients with definite employment plans in the United States who had commitments at colleges and universities, by field of study: Selected years of doctorate 1970–1988

Field of study [1]	1970	1972	1974	1976	1978	1980	1982	1984	1986	1988
All fields [2]	68.1	67.7	62.6	60.5	56.9	52.6	50.3	50.7	50.3	51.9
Humanities and social/behavioral sciences	86.4	83.3	78.3	73.8	69.1	62.7	61.8	60.2	58.4	61.3
Humanities	96.3	94.1	91.1	90.0	85.5	81.0	82.7	81.9	80.5	82.6
Social and behavioral sciences	80.4	76.6	71.2	66.1	61.3	54.5	52.5	50.2	48.9	51.0
Natural and computer sciences and engineering	47.6	49.2	42.4	43.7	40.3	37.7	35.8	38.2	37.5	39.0
Natural sciences	56.9	60.8	53.1	52.0	46.5	42.6	39.5	40.6	39.2	40.9
Life sciences	68.1	66.1	62.0	59.0	58.4	56.1	53.4	47.6	48.8	48.2
Physical sciences	38.2	45.5	32.3	31.6	24.9	20.1	19.2	22.5	20.6	23.3
Mathematics	80.3	78.7	77.1	77.8	71.4	72.1	74.6	79.4	76.5	81.5
Computer sciences and engineering	28.6	27.0	21.1	27.0	27.5	28.4	28.6	34.1	35.0	36.9
Computer and information sciences	—	—	—	—	60.6	47.4	50.4	50.3	51.3	58.9
Engineering	28.6	27.0	21.1	27.0	25.6	26.5	26.2	31.7	32.6	32.8
Technical/professional	72.6	66.9	62.9	59.4	57.7	54.9	51.6	51.9	52.8	53.9
Education	70.9	63.5	58.5	54.7	52.5	50.0	45.9	43.9	45.0	44.5
Other technical/professional	80.5	82.0	77.7	75.6	73.0	70.7	67.9	72.4	71.9	74.1

— Data not collected as a separate field of study.

[1] Field classification differs slightly from that used in other indicators in this volume. One such difference is the inclusion of agriculture and agricultural sciences with the life sciences rather than with technical/professional fields.

[2] Includes those for whom field of study is unknown.

NOTE: Only doctorate recipients with definite employment commitments in the United States are reported here. A "definite commitment" is defined as a signed contract, acceptance of a formal offer, etc.

SOURCE: National Research Council, Doctorate Records File, Survey of Earned Doctorates, various years, unpublished tabulations.

Table 2:28-2 Number of new doctorate recipients with definite employment plans in the United States who had commitments at colleges and universities, by field of study: Selected years of doctorate 1970–1988

Field of study [1]	1970	1972	1974	1976	1978	1980	1982	1984	1986	1988
All fields [2]	11,537	11,917	10,414	9,761	8,260	7,910	7,275	6,770	6,745	6,952
Humanities and social/behavioral sciences	5,071	5,441	4,721	4,193	3,427	3,055	2,836	2,548	2,480	2,619
Humanities	2,123	2,331	1,952	1,646	1,376	1,221	1,173	1,088	1,030	1,144
Social and behavioral sciences	2,948	3,110	2,769	2,547	2,051	1,834	1,663	1,460	1,450	1,475
Natural and computer sciences and engineering	2,973	2,591	1,999	1,810	1,578	1,583	1,503	1,439	1,424	1,542
Natural sciences	2,388	2,106	1,665	1,439	1,226	1,168	1,101	961	890	862
Life sciences	1,048	936	823	696	630	620	578	431	434	401
Physical sciences	723	607	398	336	277	245	259	248	221	232
Mathematics	617	563	444	407	319	303	264	282	235	229
Computer sciences and engineering	585	485	334	371	352	415	402	478	534	680
Computer and information sciences	—	—	—	—	43	63	68	91	101	168
Engineering	585	485	334	371	309	352	334	387	433	512
Technical/professional	3,469	3,880	3,681	3,737	3,246	3,268	2,926	2,778	2,830	2,777
Education	2,786	3,000	2,644	2,681	2,211	2,264	1,928	1,693	1,717	1,562
Other technical/professional	683	880	1,037	1,056	1,035	1,004	998	1,085	1,113	1,215

— Data not collected as a separate field of study.

[1] Field classification differs slightly from that used in other indicators in this volume. One such difference is the inclusion of agriculture and agricultural sciences with the life sciences rather than with technical/professional fields.

[2] Includes those for whom field of study is unknown.

NOTE: Only doctorate recipients with definite employment commitments in the United States are reported here. A "definite commitment" is defined as a signed contract, acceptance of a formal offer, etc.

SOURCE: National Research Council, Doctorate Records File, Survey of Earned Doctorates, various years, unpublished tabulations.

Table 2:28-3. Number of new doctorate recipients, by postgraduate plans: Selected years of doctorate 1970–1988

		Doctorates with definite postgraduation commitments in the United States [3]				
Year of doctorate	Total number of doctorates [1]	Total with plans [2]	Postdoctoral study	Employment	Outside United States	Location unknown
1970	29,498	22,596	2,934	16,931	1,864	810
1972	33,041	23,902	3,272	17,605	2,317	521
1974	33,047	22,283	2,920	16,624	2,103	529
1976	32,946	22,503	3,497	16,147	2,059	618
1978	30,875	20,849	3,623	14,510	1,808	805
1980	31,020	21,919	3,824	15,035	1,867	1,132
1982	31,096	21,422	3,688	14,457	2,041	1,206
1984	31,277	20,757	3,958	13,346	1,966	1,451
1986	31,896	21,294	4,301	13,415	2,112	1,402
1988	33,456	22,089	4,958	13,400	2,097	1,537

[1] Due to differences in survey design, the total number of doctorates reported by the Survey of Earned Doctorates differs from that obtained from the U.S. Department of Education's IPEDS/HEGIS surveys of degrees conferred.

[2] Includes those with unknown type of plans in the U.S.

[3] Those with unknown type of plans are not shown.

NOTE: A "definite commitment" is defined as a signed contract, acceptance of a formal offer, etc.

SOURCE: National Science Foundation, *Science and Engineering Doctorates: 1960-88* and unpublished tabulations.

Indicator 2:29

Table 2:29-1 Percent of doctorate holders aged 55 or older, by type of employer and field: Selected years 1977–1987

Type of employer and field	1977	1979	1981	1983	1985	1987
4-year college/university						
Total	15.9	17.3	19.1	20.7	21.7	22.5
Humanities	19.5	20.0	21.5	23.2	24.5	25.7
Social and behavioral sciences	16.5	18.0	20.1	21.9	22.1	21.8
Natural/computer sciences and engineering	14.1	15.8	17.6	19.1	20.2	21.4
Natural sciences	14.2	16.0	17.3	19.0	20.1	21.1
Life sciences	15.4	16.2	17.4	19.3	19.5	19.9
Physical sciences	13.8	16.6	18.5	19.8	22.0	24.0
Mathematics	10.8	13.3	13.7	15.9	17.9	19.0
Computer sciences and engineering	13.2	14.9	19.0	19.1	20.5	22.6
Computer sciences	5.8	9.1	12.7	14.0	12.3	12.6
Engineering	14.2	15.7	20.0	20.1	22.5	24.9
Other employers						
Total	14.3	15.0	15.7	15.7	16.5	16.0
Humanities	17.8	16.0	15.0	12.8	14.8	15.6
Social and behavioral sciences	16.8	15.8	17.4	17.1	18.3	17.6
Natural/computer sciences and engineering	13.2	14.7	15.3	15.6	16.1	15.4
Natural sciences	14.9	16.7	17.4	17.4	18.1	16.5
Life sciences	15.8	17.0	17.2	17.1	17.1	15.9
Physical sciences	14.7	16.4	17.9	18.0	19.0	17.2
Mathematics	9.3	17.6	13.6	14.0	15.9	14.1
Computer sciences and engineering	9.8	10.8	11.4	12.3	12.7	13.6
Computer sciences	5.3	4.7	6.0	7.1	6.5	9.2
Engineering	10.3	11.6	12.3	13.3	14.1	14.8

NOTE: Data pertain to doctorate holders in the humanities, sciences, and engineering. For the humanities, field is defined by field of doctorate. For the sciences and engineering, field is defined by field of employment if employment is in the sciences or engineering; otherwise, it is defined by field of doctorate.

SOURCE: National Research Council, Survey of Doctorate Recipients, unpublished tabulations, various years.

Table 2:29-2 Standard errors for estimated percentages in table 2:29-1

Type of employer and field	1977	1979	1981	1983	1985	1987
4-year college/university						
Total	0.2	0.3	0.3	0.3	0.4	0.4
Humanities	0.5	0.6	0.6	0.6	0.7	0.8
Social and behavioral sciences	0.5	0.7	0.7	0.7	0.8	0.8
Natural/computer sciences and engineering	0.3	0.4	0.4	0.3	0.5	0.5
Natural sciences	0.3	0.4	0.4	0.4	0.5	0.5
Life sciences	0.5	0.5	0.5	0.5	0.6	0.6
Physical sciences	0.5	0.7	0.7	0.7	0.9	1.0
Mathematics	0.8	0.9	0.9	0.9	1.3	1.3
Computer sciences and engineering	0.7	1.2	1.1	1.0	1.3	1.3
Computer sciences	1.4	1.7	1.5	1.2	2.1	2.0
Engineering	0.8	1.5	1.5	1.4	1.6	1.5
Other employers						
Humanities	1.1	1.1	0.9	0.8	1.0	1.1
Social and behavioral sciences	0.6	0.8	0.7	0.7	0.8	0.8
Natural/computer sciences and engineering	0.3	0.4	0.3	0.3	0.4	0.4
Natural sciences	0.4	0.4	0.4	0.4	0.5	0.5
Life sciences	0.6	0.7	0.6	0.6	0.7	0.7
Physical sciences	0.5	0.6	0.6	0.6	0.7	0.7
Mathematics	1.6	2.0	1.8	1.7	2.2	2.1
Computer sciences and engineering	0.5	0.8	0.6	0.6	0.8	0.7
Computer sciences	1.0	1.0	0.7	0.6	1.1	1.1
Engineering	0.5	1.0	0.8	0.8	0.9	0.9

NOTE: See note to table 2:29-1.

SOURCE: National Research Council, *Science, Engineering, and Humanities Doctorates in the United States* (1977, 1979, 1981, and 1983) and *Methodological Report for the Survey of Doctorate Recipients* (1985 and 1987).

Table 2:29-3 Percentage distribution of age of employed doctorate holders, by type of employer: 1977 and 1987

Age	4-year college/ university		Other employer	
	1977	1987	1977	1987
Total	100.0	100.0	100.0	100.0
Under 40	42.6	26.3	46.5	30.1
40-54	41.3	51.0	39.1	53.7
55 or older	15.9	22.5	14.3	16.0
No report	0.2	0.2	0.1	0.2

NOTE: See note to table 2:29-1.

SOURCE: National Research Council, Survey of Doctorate Recipients, unpublished tabulations, various years.

Table 2:29-4 Standard errors for estimated percentages in table 2:29-3

Age	4-year college/ university		Other employer	
	1977	1987	1977	1987
Under 40	0.3	0.4	0.4	0.4
40-54	0.3	0.4	0.4	0.5
55 or older	0.2	0.4	0.3	0.3
No report	*	*	*	*

* Less than 0.1.

NOTE: See note to table 2:29-1.

SOURCE: National Research Council, *Science, Engineering, and Humanities Doctorates in the United States* (1977) and *Methodological Report of the 1987 Survey of Doctorate Recipients.*

Indicator 2:29

Supplemental note 2:29 Age of doctorate recipients employed in 4-year colleges and universities: Calculation of standard errors

This note concerns the calculation of standard errors for data obtained from the Survey of Doctorate Recipients (SDR) conducted by the National Research Council (NRC). The calculations were based on information contained in the NRC reports referenced at the end of this note.

For the years 1985 and 1987, NRC constructed generalized variance functions (GVFs) for estimating standard errors. The GVF for a total X (e.g., the number of chemists) expresses the relative variance of X as a function of X:

$$\mathrm{relvar}(X)=a+b/X$$

where $\mathrm{relvar}(X) = (\text{variance } X)/X^2$. The a and b parameters for different subcategories of individuals are given in the 1985 and 1987 methodological reports cited below. For proportions Y/X where X and Y are counts and Y is a subset of X,

$$\mathrm{relvar}(Y/X)=b(1/Y-1/X).$$

Because some of the categories of field of study presented in this indicator are combinations of categories presented in the NRC reports, estimates of the parameters for the combined groups were derived from the parameters of the individual groups. Formulas for a and b for combined groups are as follows. If the totals in the individual categories to be combined are $Y_1, Y_2, \ldots, Y_C$ (numerators) and $X_1, X_2, \ldots, X_C$ (denominators) and the totals for the combined groups are Y_T and X_T, then the a and b parameters for the combined groups are

$$a_T=\sum_{i=1}^{T}\left(\frac{x_i}{x_T}\right)^2 a_i$$

$$b_T=\sum_{i=1}^{T}\left(\frac{x_i}{x_T}\right)b_i$$

assuming $\mathrm{cov}(X_i, X_j)$ and $\mathrm{cov}(Y_i, Y_j)$ are negligible.

For earlier years (1977-1983), generalized variance functions were not constructed. The NRC reports for these years recommend the use of standard errors based on simple random samples

$$se(p)=\sqrt{\frac{p(1-p)}{n}}$$

Indicator 2:29

Comparisons of standard errors based on simple random samples and stratified random samples for selected statistics in the NRC reports showed, for the most part, small differences between the two. Thus, standard errors presented in this indicator for 1977-1983 are based on simple random sample formulae.

Sources:

National Research Council, *Science, Engineering, and Humanities Doctorates in the United States: 1977 Profile* (and *Profiles* for 1979, 1981, and 1983).

National Research Council, *Methodological Report for the 1985 Survey of Doctorate Recipients*, April 1987 and *Methodological Report for the 1987 Survey of Doctorate Recipients*, April 1989.

Indicator 2:30

Table 2:30-1 Average full-time faculty salaries in constant 1989 dollars in institutions of higher education, by control and type of institution and academic rank: Selected academic years ending 1972–1988

Year	All institutions			Public institutions			Private institutions		
	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor
				All institutions					
1972	56,689	42,929	35,484	57,266	43,691	36,103	55,554	41,216	34,042
1973	56,967	43,276	35,724	57,747	44,250	36,484	55,437	41,114	33,980
1975	52,194	39,589	32,622	52,978	40,676	33,520	50,568	37,026	30,531
1976	51,831	39,030	32,016	52,610	40,114	32,889	50,272	36,494	30,069
1977	51,535	38,783	31,759	52,185	39,760	32,554	50,148	36,370	29,941
1978	51,014	38,539	31,522	51,745	39,548	32,387	49,402	35,969	29,509
1979	49,126	37,205	30,389	49,722	38,165	31,237	47,754	34,743	28,427
1980	46,488	35,128	28,600	47,139	36,094	29,453	44,978	32,719	26,697
1981	45,133	34,069	27,739	45,608	34,888	28,517	44,019	32,042	26,075
1982	45,308	34,210	27,866	45,506	34,906	28,602	44,832	32,461	26,311
1983	46,034	34,870	28,568	45,947	35,420	29,193	46,242	33,516	27,270
1985	47,770	35,993	29,651	47,503	36,487	30,236	48,416	34,813	28,446
1986	49,381	37,136	30,700	49,451	37,814	31,487	49,206	35,516	29,080
1988	51,630	38,665	31,945	51,685	39,502	32,764	51,555	36,923	30,119
				4-year institutions					
1972	57,079	42,958	35,452	57,766	43,723	36,080	55,778	41,365	34,137
1973	57,385	43,246	35,598	58,315	44,238	36,360	55,681	41,236	34,057
1975	52,561	39,461	32,390	53,506	40,566	33,282	50,752	37,142	30,623
1976	52,216	39,013	31,946	53,137	40,169	32,880	50,501	36,612	30,162
1977	51,816	38,770	31,709	52,574	39,829	32,571	50,287	36,444	30,011
1978	51,268	38,505	31,382	52,098	39,601	32,302	49,553	36,049	29,574
1979	49,414	37,211	30,283	50,121	38,267	31,189	47,888	34,828	28,505
1980	46,815	35,157	28,512	47,599	36,243	29,429	45,125	32,796	26,773
1981	45,518	34,143	27,689	46,144	35,073	28,534	44,158	32,121	26,147
1982	45,698	34,282	27,830	46,038	35,089	28,640	44,943	32,516	26,378
1983	46,486	34,989	28,568	46,523	35,634	29,257	46,406	33,611	27,354
1985	48,379	36,169	29,727	48,290	36,774	30,394	48,571	34,916	28,556
1986	50,006	37,315	30,767	50,288	38,136	31,661	49,372	35,617	29,193
1988	52,304	38,848	32,055	52,586	39,806	32,964	51,718	37,026	30,555

Indicator 2:30

Table 2:30-1 Average full-time faculty salaries in constant 1989 dollars in institutions of higher education, by control and type of institution and academic rank: Selected academic years ending 1972–1988—Continued

Year	All institutions			Public institutions			Private institutions		
	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor	Professor	Associate professor	Assistant professor
					2-year-Institutions				
1972	$45,619	$42,509	$35,825	$47,012	$43,357	$36,292	31,871	31,648	28,673
1973	49,494	43,641	36,871	50,724	44,336	37,285	31,759	32,887	29,493
1975	46,588	40,848	34,267	47,404	41,454	34,699	30,634	29,848	26,154
1976	45,321	39,199	32,548	46,430	39,738	32,939	28,428	28,920	25,429
1977	45,470	38,907	32,155	46,256	39,247	32,454	30,734	30,234	25,969
1978	46,321	38,860	32,521	47,135	39,193	32,795	28,703	29,275	25,256
1979	44,024	37,161	31,159	44,659	37,499	31,478	29,316	28,228	23,882
1980	41,105	34,867	29,259	41,735	35,164	29,575	27,108	26,499	22,246
1981	38,932	33,388	28,128	39,449	33,677	28,427	27,363	25,954	21,519
1982	39,434	33,571	28,143	39,791	33,760	28,412	28,915	27,169	21,980
1983	39,739	33,847	28,571	40,228	34,129	28,871	26,979	25,502	22,232
1985	40,264	34,497	29,060	40,632	34,781	29,416	28,343	25,694	22,165
1986	42,147	35,613	30,169	42,547	35,905	30,565	28,645	26,043	22,545
1988	42,976	37,123	31,024	43,289	37,212	31,299	29,406	26,571	23,493

NOTE: Salaries are for full-time instructional faculty on 9- or 10-month contracts. In 1987-88, data were imputed for total nonresponding institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, surveys of faculty salaries.

Table 2:30-2 Average faculty salaries and standard errors for full-time regular faculty in 4-year institutions, by department program area: Fall 1987

Department program area	Average faculty salary	Standard error
All areas	$41,540	$730
Agriculture and home economics	40,827	1,669
Business	39,345	1,026
Education	34,374	562
Engineering	45,387	1,163
Fine arts	33,534	509
Health sciences	56,328	2,209
Humanities	34,854	640
Natural sciences	40,246	675
Social sciences	37,209	614
Other program areas	36,711	963

SOURCE: U.S. Department of Education, National Center for Education Statistics, *Faculty in Higher Education Institutions*, Contractor Report on the 1988 National Survey of Postsecondary Faculty, January 1990 (table 3.1).

B. Sources of Data

General Information

The information presented in this report was obtained from many sources, including Federal and State agencies, private research organizations, and professional associations. The data were collected using many research methods including surveys of a universe (such as all colleges) or of a sample, compilations of administrative records, and statistical projections. Users of *The Condition of Education* should take particular care when comparing data from different sources. Differences in procedures, timing, phrasing of questions, interviewer training, and so forth mean that the results from the different sources are not strictly comparable. Following the general discussion of data accuracy below, descriptions of the information sources and data collection methods are presented, grouped by sponsoring organization. More extensive documentation of one survey's procedures than of another's does not imply more problems with the data, only that more information is available.

Unless otherwise noted, all comparisons cited in the text were tested for significance using t-tests and are significant at the .05 level. When other tests were used, they are described in the supplemental note for the indicator.

The accuracy of any statistic is determined by the joint effects of "sampling" and "nonsampling" errors. Estimates based on a sample will differ somewhat from the figures that would have been obtained if a complete census had been taken using the same survey instruments, instructions, and procedures. In addition to such sampling errors, all surveys, both universe and sample, are subject to design, reporting, and processing errors and errors due to nonresponse. To the extent possible, these nonsampling errors are kept to a minimum by methods built into the survey procedures. In general, however, the effects of nonsampling errors are more difficult to gauge than those produced by sampling variability.

The estimated standard error of a statistic is a measure of the variation due to sampling and can be used to examine the precision obtained in a particular sample for normally distributed statistics. The sample estimate and an estimate of its standard error permit the construction of interval estimates with prescribed confidence that the interval includes the average result of all possible samples. If all possible samples were selected, each of these surveyed under essentially the same conditions, and an estimate and its standard error were calculated from each sample, then approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average value from all possible samples; 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average value of all possible samples; and 99 percent of all intervals from 2.5 standard errors below the estimate to 2.5 standard errors above the estimate would include the average value of all possible samples. These intervals are called 90 percent, 95 percent, and 99 percent confidence intervals, respectively.

To illustrate this further, consider table 2:1-3 for estimates of standard errors from Cenus Current Population Surveys. For an estimate of the percent of 1988 high school graduates enrolled in college in October of 1988 of 58.9, the table shows a standard error of 1.4. Therefore, we can construct a 95 percent confidence interval from 57.5 to 60.3 (58.9 ± 2 x 1.4). If this procedure were followed for every possible sample, about 95 percent of the intervals would include the average for all possible samples.

Standard errors can help assess how valid a comparison between two estimates might be. The standard error of a difference between two sample estimates is approximately equal to the square root of the sum of the squared standard errors of the estimates. The standard error (se) of the difference between sample estimate "a" and sample estimate "b" (if "a" and "b" are approximately independent) is:

$$se_{a,b} = \sqrt{s_a^2 + s_b^2}$$

It should be noted that most of the standard errors presented in the indicators and in the original documents are approximations. That is, to derive estimates of standard errors that would be applicable to a wide variety of items and that could be prepared at a moderate cost, a number of approximations were required. As a result, most of the standard errors presented provide a general order of magnitude rather than the exact standard error for any specific item.

Both universe and sample surveys are subject to nonsampling errors. Nonsampling errors are of two kinds—random and nonrandom. Random nonsampling errors may arise when respondents or interviewers interpret questions differently, when respondents must estimate values, or when coders, keyers, and other processors handle answers differently. Nonrandom nonsampling errors result from total nonresponse (no usable data obtained for a sampled unit), partial or item nonresponse (only a portion of a response may be usable), inability or unwillingness on the part of respondents to provide correct information, difficulty interpreting questions, mistakes in recording or keying data, errors of collection or processing, and overcoverage or undercoverage of the target universe. Random nonresponse errors usually, but not always, result in an understatement of sampling errors and thus an overstatement of the precision of survey estimates. Since estimating the magnitude of nonsampling errors would require special experiments or access to independent data, these magnitudes are seldom available.

To compensate for suspected nonrandom errors, adjustments of the sample estimates are often made. For example, adjustments are frequently made for nonresponse, both total and partial. An adjustment made for either type of nonresponse is often referred to as an imputation—for example, substitution of the "average" questionnaire response for the nonresponse. Imputations are usually made separately within various groups of sample members which have similar survey characteristics. Imputation for item nonresponse is often made by substituting for a missing item the response to that item of a respondent having characteristics that are similar to those of the nonrespondent.

1. Federal Agency Sources

Bureau of the Census
U.S. Department of Commerce

Current Population Survey

Current estimates of school enrollment and social and economic characteristics of students are based on data collected in the Census Bureau's monthly household survey of about 60,000 households, Current Population Survey (CPS). The CPS consists of 729 samples areas comprising 1,973 counties, independent cities, and minor civil divisions throughout the 50 States and the District of Columbia. The current sample was selected from 1980 census files and is periodically updated to reflect new housing construction.

The primary function of the monthly CPS is to collect data on labor force participation of the civilian noninstitutional population (it excludes military personnel and inmates of institutions). In October of each year questions on school enrollment by grade and other school characteristics are asked about each member of the household. A report on the educational attainment of the population is produced from data gathered in March of each year when supplemental questions on person's income are asked.

The estimation procedure employed for the monthly CPS data involves inflating weighted sample results to independent estimates for the total civilian noninstitutional population by age, sex, race, and Hispanic origin. These independent estimates are derived from statistics from decennial censuses of the population: statistics on births, deaths, and immigration and emigration: and statistics on the strength of the Armed Forces. Generalized standard error tables are provided in the *Current Population Reports*. The data are subject to both nonsampling and sampling errors.

Further information is available in the *Current Population Reports*, Series P-20, or by contacting:

Education and Social Stratification Branch
Population Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

School Enrollment. Each October, the Current Population Survey (CPS) includes supplemental questions on the enrollment status of the population aged 3 years old and over. Annual reports documenting school enrollment of the population have been produced by the Bureau of the Census since 1946. The latest report is *Current Population Reports*, Series P-20, No. 429, "School Enrollment--Social and Economic Characteristics of Students: October 1986." All sample surveys are subject to sampling and nonsampling error. The main sources of nonsampling error in the supplement are those inherent in any household survey. When a household respondent reports for all individuals in the household, is that person knowledgeable about the grade or level of school, type of school, or full-time status? In addition, some analysts believe social acceptability of response causes biased reporting, such as reluctance to report lack of a high school diploma; some dismiss it. Household-reported data may not be consistent with administrative data because definitions may not be the same. An additional source of variation in statistics reported may be a change in the survey universe over time. For example, a significantly larger proportion of young men were members of the Armed Forces in the late 1960s and early 1970s, than before or after and, therefore, were not in the CPS universe. That caused a short term increase in the enrollment *rate* of young men, which was greater than the increase in numbers of enrollees would indicate. Other events may similarly affect survey data. The user must be mindful of external events as well as the character of the population being measured when describing survey trends.

An advantage of household survey data over administrative data is the availability of demographic, social and economic data for the student and family, not available in administrative data. Beginning with data for October 1981, tabulations have been controlled to the 1980 census. Estimates for earlier years were controlled to earlier censuses.

Questions concerning the CPS school enrollment data may be directed to:

Education and Social Stratification Branch
Population Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

Educational Attainment. Data on years of school completed are derived from two questions on the Current Population Survey (CPS) instrument. Biennial reports documenting educational attainment are produced by the Bureau of the Census using March CPS data. The latest report is *Current Population Reports*, Series P-20, No. 428 "Educational Attainment in the United States, March 1987 and 1986,".

The usual constraints on use of household survey data apply. Reliability of response may depend on whether a proxy respondent was used, the recency and importance of the event, the number and clarity of response categories. There is some evidence that years of school completed in the CPS may not measure completion of degrees as clearly as they once did. The number of persons who have completed 4 years of college has been increasing more rapidly than the number of bachelor's degrees added each year would suggest. While the number of years completed is not deteriorating in quality (that is, respondents are not exaggerating the number of years), more students than in the past are taking more than 4 academic years to complete a bachelor's degree. Also, although interviewers are instructed to count receiving a high school diploma by means of passing a GED exam as completion of the twelfth grade, as the number of persons who have received a diploma in this way has increased the number counted appropriately may not have kept pace. The 1990 Census of Population will contain a question on highest degree received rather than relying solely on a years of school completed item.

Beginning with the data for March 1980, tabulations have been controlled to the 1980 census. Estimated for earlier years were controlled to earlier censuses.

Questions concerning the CPS educational attainment data may be directed to:

Education and Social Stratification Branch
Population Division
Bureau of the Census
U.S. Department of Commerce
Washington, DC 20233

Bureau of Labor Statistics
U.S. Department of Labor

Educational Attainment of Workers

These data are collected by the March supplement to the Current Population Survey (CPS) sponsored by the Bureau of Labor Statistics and conducted by the Bureau of the Census. Sampling and nonsampling errors associated with the CPS are discussed under that heading. For further information on employment and unemployment statistics contact:

Division of Labor Force Statistics
Bureau of Labor Statistics
441 G Street, NW (Room 2486)
Washington, DC 20212

National Center for Education Statistics
U.S. Department of Education

Integrated Postsecondary Education Data System

The Integrated Postsecondary Education Data System (IPEDS) surveys all postsecondary institutions, including universities and colleges as well as institutions offering technical and vocational education beyond the high school level. This survey, which began in 1986, will both replace and supplement the previous one, the Higher Education General Information Survey (HEGIS). For a full description of the various programs contained in IPEDS, therefore, the reader is referred to a discussion of the various HEGIS programs outlined below. What follows in this section is a brief overview of the IPEDS program.

The IPEDS consists of several integrated components that obtain information on who provides postsecondary education (institutions), who participates in it and completes it (students), what programs are offered and what programs are completed, and the resources involved in the provision of institutionally based postsecondary education, both human resources and financial resources. Specifically, these components include: institutional characteristics including institutional activity; fall enrollment, including age and residence; fall enrollment in occupationally specific programs; completions; finance; staff; salaries of full-time instructional faculty; and academic libraries.

The higher education portion of this survey is a census of all education institutions. However, data from the other technical and vocational institutions are collected through a sample survey. Thus, some portions of the data will be subject to sampling and nonsampling errors, while some portions will be subject only to nonsampling errors. The tabulations on institutional characteristics developed for this edition of the *Condition* are based on lists of all institutions and are not subject to sampling errors.

Further information on IPEDS may be obtained from:

William Freund
Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue, NW.
Washington, DC 20208-5652

Higher Education General Information Survey

The "Higher Education General Information Survey" (HEGIS) was a coordinated effort administered by NCES which acquired and maintained statistical data on the characteristics and operations of institutions of higher education. Implemented in 1966, HEGIS was an annual universe survey of institutions listed in the latest NCES *Education Directory, Colleges and Universities*. It has since been replaced by the Integrated Postsecondary Education Data System (see above).

The information presented in this report drew on HEGIS surveys which solicited information concerning institutional characteristics, faculty salaries, finances, enrollment, and degrees. Since these surveys were distributed to all higher education institutions, the data presented were not subject to sampling error. However they were subject to nonsampling error, the sources of which varied with the survey instrument. Each survey is therefore discussed separately. Information concerning the nonsampling error of the enrollment and degrees surveys draws extensively on the "HEGIS Post-Survey Validation Study" conducted in 1979.

Institutional Characteristics of Colleges and Universities. This survey provided the basis for the universe of institutions presented in the *Education Directory, Colleges and Universities*, and it was used in all other HEGIS data collection activities. The universe comprised institutions that offer at least a 1-year program of college-level studies leading toward a degree and that met certain accreditation criteria. In the fall, institutions included in the *Directory* the previous year received a computer printout of their information to update. All institutions reported were certified as eligible to be listed by the Division of Eligibility and Agency Evaluation within the U.S. Department of Education.

Opening Fall Enrollment in Colleges and Universities. This survey was part of the HEGIS series since its development. The enrollment survey response rate was relatively high; the 1985 response rate was 92 percent. Major sources of nonsampling error for this survey were classification problems, the unavailability of needed data, interpretation of definitions, the survey due date, and operational errors. Of these, the classification of students appears to have been the main source of error. Institutions had problems in correctly classifying first-time freshmen, other first-time students, and unclassified students for both full-time and part-time categories. These problems occurred most often at 2-year institutions (both private and public) and private 4-year institutions. In 1977-78, the classification problem led to an estimated overcount of 11,000 full-time students and an undercount of 19,000 part-time students. Although the ratio of error to the grand total was quite small (less than 1 percent), the percentage of errors was as high as 5 percent for detailed student levels and even higher at certain disaggregated levels.

Beginning with fall 1986, the survey system was redesigned with the introduction of the Integrated Postsecondary Education Data System (IPEDS) (see above). The new survey system comprises all postsecondary institutions, but also maintains comparability with earlier surveys by allowing HEGIS institutions to be tabulated separately. The new system also provides for preliminary and revised data releases. This allows the Center flexibility to release early data sets while still maintaining a more accurate final data base.

Salaries, Tenure, and Fringe Benefits of Full-Time Instructional Faculty. This survey has been conducted for most years from 1966–67 to 1987–88. Although the survey form was changed a number of times during those years, only comparable data are presented in this report. The data were collected from the individual colleges and universities.

Until 1987, this survey differed from other HEGIS surveys in that imputations were not made for nonrespondents. Thus, there is greater possibility that the salary averages presented in this report may differ from the results of a complete enumeration of all colleges and universities. The response rate for the 1984-85 survey was 86.3 percent. The response rate for public colleges was substantially higher than the response rate for private colleges. It is probable that the public colleges' salary data were more accurate than the data for private colleges. Other sources of nonsampling error included computational errors and misclassification in reporting and processing. NCES checked individual colleges' data for internal and longitudinal consistency and contacted the colleges to check inconsistent data.

Earned Degrees Conferred. This survey was part of the HEGIS series throughout its existence. However, the degree classification taxonomy was revised in 1970-71 and 1982-83. Though information from survey years 1970-71 through 1981-82 is directly comparable, care must be taken if information before or after that period is included in any comparison. Degrees-conferred trend tables arranged by the 1982-83 classification were added to the *Condition* to provide consistent data from 1970-71 to 1983-84. Data in this edition on associate and other formal awards below the baccalaureate, by field of study, are not comparable with figures for earlier years. The nonresponse did not appear to be a significant source of nonsampling error for this survey. The return rate over the years was extremely high, with the response rate for the 1983-84 survey at 95 percent. Because of the high return rate, nonsampling error caused by imputation was also minimal.

The major sources of nonsampling error for this survey were differences between the HEGIS program taxonomy and taxonomies used by the colleges, classification of double majors and double degrees, operational problems, and survey timing. In the 1979 validation study, these sources of nonsampling error were found to contribute to an error rate of 0.3 percent overreporting of bachelor's degrees and 1.3 percent overreporting of master's degrees. The differences, however, varied greatly among fields. Over 50 percent of the fields selected for the validation study had no errors identified. Categories of fields that had large differences were business and management, education, engineering, letters, and psychology. It was also shown that differences in proportion to the published figures were less than 1 percent for most of the selected fields that had some errors. Exceptions to these were: master's and Ph.D. programs in labor and industrial relations (20 percent and 8 percent); bachelors's and master's programs in art education (3 percent and 4 percent); bachelor's and Ph.D. programs in business and commerce, and in distributive education (5 percent and 9 percent); master's programs in philosophy (8 percent); and Ph.D. programs in psychology (11 percent).

Beginning with the 1986–87 academic year, the IPEDS completions survey replaced the HEGIS *Earned Degrees Conferred* survey.

Financial Statistics of Institutions of Higher Education. This survey was part of the HEGIS series throughout its existence. A number of changes were made in the financial survey instruments in 1975. In 1982 another change was made to include Pell Grants in Federal restricted grants and contracts revenues and restricted scholarships and fellowships expenditures. While these changes were significant, only comparable information on trends is presented in this report, except where noted. Finance tables for this publication have been adjusted by subtracting the Pell Grant amounts from the later data to maintain comparability with pre-1982 data.

Other possible sources of nonsampling error in the financial statistics were nonresponse, imputation, and misclassification. The response rate has been over 90 percent for most of the years reported. The response rate for the latest (fiscal year 1985) survey was 87.6 percent.

Two general methods of imputation were used. If the prior year's data were available for a nonresponding institution, these data were inflated using the Higher Education Price Index and adjusted according to changes in enrollments. If no previous year's data were available, current data were used from peer institutions selected for location (State or region), control, level, and enrollment size of institution. For the most recent years reported, the imputation method did not include the adjustment for changes in enrollments, and new institutions which never reported to HEGIS surveys were not imputed. For the fiscal year 1985 survey, survey forms were mailed to 3,379 institutions. Reports were received from 2,959 institutions, and data for 370 institutions were estimated based on their fiscal year 1984 reports inflated by the Higher Education Price Index. The remaining 50 institutions were not imputed because they had never responded to HEGIS surveys. The imputed current-fund expenditures of the nonrespondents were generally less than 3 percent of the aggregate U.S. total.

To reduce reporting error, NCES used national standards for reporting finance statistics. These standards are contained in *Colleges and University Business Administration: Administrative Services (1974 Edition)*, published by the National Association of College and University Business Officers; *Audits of Colleges and Universities* (as amended August 31, 1974), by the American Institute of Certified Public Accountants; and *HEGIS Financial Reporting Guide (1980)*, by NCES. Wherever possible, definitions and formats in the survey form are consistent with those in these three accounting references.

Questions concerning the surveys used as data sources for this report or other questions concerning HEGIS can be directed to:

Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue, NW.
Washington, DC 20208-5652

National Postsecondary Student Aid Study

The National Center for Education Statistics conducted the National Postsecondary Student Aid Study (NPSAS) for the first time during the 1986-87 school year. This survey established the first comprehensive student financial aid data base. Data were gathered from 1,074 postsecondary institutions and approximately 60,000 students and 24,000 parents. These data provided information on the cost of postsecondary education, the distribution of financial aid, and characteristics of both aided and non-aided students and their families. The survey also provided data on the distribution of financial aid, the nature of aid packages, and a profile of both aided and non-aided students.

In response to the continuing need for these data, NCES will conduct the second cycle of NPSAS for the 1989-90 school year. In addition to replicating the earlier study, the 1990 NPSAS will contain enhancements to the 1987 methodology that will fully meet the data needs of the financial aid community and of policymakers.

The 1990 in-school sample will involve about 70,000 students selected from registrar lists of enrollees at 1,200 postsecondary institutions. The sample will include both aided and non-aided students. Student information such as field of study, education level and attendance status (part-time or full-time) will be obtained from registrar records. Types and amounts of financial aid and family financial characteristics will be abstracted from school financial aid records. Also, approximately 26,000 parents of students will be sampled. Data concerning family composition and parent financial characteristics will be compiled. Followup data collections are expected at two-year intervals. Students enrolled in postsecondary education for the first time in 1990 will serve as the base for the longitudinal component of NPSAS.

Further information about this survey may be obtained from:

Andrew G. Malizio
Postsecondary Education and Statistics Division
National Center for Educational Statistics
555 New Jersey Ave., NW
Washington, DC 20208-5652

Survey of Recent College Graduates

NCES has conducted periodic surveys of persons, about one year after graduation, to collect information on college outcomes. The "Recent College Graduates" surveys have concentrated on those graduates entering the teaching profession. To obtain accurate results on this subgroup, graduates who are newly qualified to teach have been oversampled in each of the surveys. The survey involves a two-stage sampling procedure. First, a sample of institutions awarding bachelor's and master's degrees is selected and stratified by percent of education graduates, control, and geographic region. Then for each of the selected institutions a sample of degree recipients is chosen. The response rates on the "Recent College Graduates" survey have tended to be low because of the great difficulty in tracing the students after graduation. Much more of the nonresponse can be attributed to invalid mailing addresses than to refusals to participate. Despite their shortcomings, the data are presented in this report because they provide valuable information not available elsewhere about college outcomes. Users should be cautious about drawing conclusions based on data from small samples. It is also likely that the data are somewhat biased since the more mobile students, such as graduate students, are the most difficult to track for the survey.

The 1976 survey of 1974-75 college graduates was the first and smallest of the series. The sample consisted of 209 schools, of which 200 (96 percent) responded. Of the 5,506 graduates in the sample, 4,350 responded for a response rate of 79 percent.

The 1981 survey was somewhat larger with a coverage of 301 institutions and 15,852 graduates. Responses were obtained from 286 institutions, for an institutional response rate of 95 percent, and from 9,312 graduates (716 others were determined to be out of scope), for a response rate of 62 percent.

The 1985 survey requested data from 18,738 graduates from 404 colleges. Responses were obtained from 13,200 students for a response rate of 74 percent (885 were out of scope). The response rate for the colleges was 98 percent. The 1987 survey form was sent to 21,957 graduates. Responses were received from 16,878, for a response rate of 79.7 percent. Table A9 contains sample sizes for number of graduates by field for the 1976, 1981, 1985, and 1987 surveys.

Further information on this survey may be obtained from:

Peter Stowe
Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue, NW.
Washington, DC 20208-5652

National Survey of Postsecondary Faculty (NSOPF-88)

The National Survey of Postsecondary Faculty is a comprehensive survey of higher education instructional faculty in the fall of 1987. It was the first such survey conducted since 1963. It gathered information regarding the backgrounds, responsibilities, workloads, salaries, benefits, and attitudes of both full- and part-time instructional faculty in 2- and 4-year institutions under both public and private control. In addition, information was gathered from institutional and department-level respondents on such issues as faculty composition, new hires, departures and recruitment, retention, and tenure policies.

There were three major components of the study: a survey of institutional level respondents at a stratified random sample of 480 U.S. colleges and universities; a survey of a stratified random sample of 3,029 eligible department chairpersons (or their equivalent) within the participating 4-year institutions; and a survey of a stratified random sample of 11,013 eligible faculty members within the participating institutions. Response rates to the three surveys were 88 percent, 80 percent, and 76 percent, respectively.

The universe of institutions from which the sample was selected was all accredited nonproprietary U.S. postsecondary institutions that grant a 2-year (A.A.) or higher degree and whose accreditation at the higher education level is recognized by the U.S. Department of Education. This includes religious, medical, and other specialized postsecondary institutions as well as 2- and 4-year nonspecialized institutions. According to the 1987 Integrated Postsecondary Education Data System (IPEDS), this universe comprised 3,159 institutions. The universe does not include proprietary two- and 4-year institutions or less than 2-year postsecondary institutions.

Further information about this survey may be obtained from:

Linda Zimbler
Postsecondary Education Statistics Division
National Center for Education Statistics
555 New Jersey Avenue, NW.
Washington, DC 20208-5652

National Science Foundation

Survey of Earned Doctorates

The Survey of Earned Doctorates (SED) has been conducted annually by the National Research Council, under contract, for the Department of Education, the National Endowment for the Humanities, the National Science Foundation, and other Federal agencies since 1957. Information from the survey becomes part of the Doctorate Records File, which includes records for doctorates awarded since 1920 by regionally accredited universities and colleges. The universe consists of all recipients of doctoral degrees such as Ph.D. or D.Sc., but excludes the recipients of first-professional degrees such as the J.D. or M.D.. Approximately 95 percent of the annual cohort of doctorate recipients have responded to the questionnaire which is distributed through the cooperation of the Graduate Deans. Partial data from public sources are added to the file for nonrespondents. The data for a given year include all doctorates awarded in the 12-month period ending on June 30 of that year.

Data for the SED are collected directly from individual doctorate recipients. In addition to the field and specialty of the degree, the recipient is asked to provide educational history, selected demographic data, and information on postgraduate work and study plans. The National Center for Education Statistics' survey of earned degrees, part of its Higher Education General Information Survey (HEGIS), collects data from institutions, not individuals. Therefore, the number of doctorates reported in SED differs slightly from HEGIS totals. Also, SED data are restricted to research doctorates.

The differences between the two data series have been generally consistent since 1960. The ratio of NCES/SED totals for all Ph.D.s has ranged from 1.01 to 1.06.

Further information on this survey can be obtained from Summary Report: *Doctorate Recipients from United States Universities*, various years, published by the National Research Council, or by contacting:

Office of Scientific and Engineering Personnel
National Research Council
2101 Constitution Avenue, NW
Washington, DC 20418

Survey of Doctorate Recipients

The Survey of Doctorate Recipients (SDR) is a biennial survey of individuals who have received doctorates in the humanities, sciences, and engineering over the past four decades. It has surveyed scientists, including social scientists and psychologists, and engineers since 1973 and humanists since 1977. It is conducted by the National Research Council with support from the National Science Foundation, the National Endowment for the Humanities, the National Institutes of Health, the Department of Agriculture, and the Department of Energy.

The population for the survey consists of individuals who have received doctorates during a 42-year period. To maintain the length of this timespan for each biennial survey, the two most recent graduating cohorts of Ph.D.'s are added to the population, and the two oldest are eliminated. It is a longitudinal survey—that is, individual members of the survey panel are resurveyed ever two years—and contains historical data on employment status, employment sector, primary work activity, academic rank, tenure status, salary, and other characteristics.

For a more detailed discussion of the history of the SDR, the sample, and other methodological issues, see: National Research Council, *Methodological Report of the 1987 Survey of Doctorate Recipients*, National Research Council, April 1989 (prepared by Mary Belisle).

For further information, contact:

Survey of Doctorate Recipients Project
Office of Scientific and Engineering Personnel
National Research Council
2101 Constitution Avenue, N.W. (Room GR 412)
Washington, D.C. 20418

Federal Obligations to Colleges and Universities and Selected Nonprofit Institutions

Each year the National Science Foundation collects data on obligations to colleges and universities from Federal agencies. Obligations differ from expenditures in that funds obligated during one fiscal year may be spent by the recipient in later years. The fiscal year 1983 data were submitted by 15 Federal agencies. Obligation amounts include direct Federal support, so that amounts subcontracted to other institutions are included. Those funds received through subcontracts are excluded. Also excluded from the data are certain types of financial assistance such as the Department of Education's Guaranteed Student Loan Program and obligations to the U.S. service academies. For purposes of tabulations in this publication, university administered federally funded research and development centers (FFRDC's) have been included in appropriate State totals.

The universe of academic institutions for this survey is based on the Higher Education General Information Survey conducted by the National Center for Education Statistics (see above). Institutions without Federal support were excluded and some systems were combined into single reporting units.

Further information on this survey may be obtained from *Federal Support to Universities, Colleges, and Selected nonprofit Institutions*, published by the National Science Foundation or by contacting:

Universities and Nonprofit Institutions Study Group
Division of Science Resources Studies
National Science Foundation, Room L-602
Washington, DC 20550

2. Private Research and Professional Associations

Graduate Record Examination Council

All students who have taken the Graduate Record Examinations (GRE) General Test were asked a series of background information questions. These responses and the test scores themselves form the basis for continuing GRE Program research. In addition, these data are compiled an included in an annual report. The 12th in the series is *A Summary of Data Collected From Graduate Record Examinations Test Takers During: 1986–1987*.

The GRE cautions users of these data that "information in these reports is based soley on examinees who took the Graduate Record Examination (GRE) General Test and should not be interpreted as being representative of any other group. The report does not present data for all baccalaureate degree recipients, for all graduate school applicants, or for all first-time graduate school enrollees." Nevertheless, the test-taking group is a large subset (albeit self-selected one) of each of these groups.

Further information on this and previous editions of the report may be obtained by contacting:

Office of the GRE Program Director
Educational Testing Service
Princeton, NJ 08541

Academic support: This category of college expenditures includes expenditures for support services that are an integral part of the institution's primary missions of instruction, research, or public service. Includes expenditures for libraries, galleries, audio/visual services, academic computing support, ancillary support, academic administration, personnel development, and course and curriculum development.

Agriculture: Courses designed to improve competencies in agricultural occupations. Included is the study of agricultural production, supplies, mechanization and products, agricultural science, forestry, and related services.

American College Testing Program (ACT): The ACT assessment program measures educational development and readiness to pursue college-level coursework in English, mathematics, natural science, and social studies.

Appropriation (institutional revenues): An amount (other than a grant or contract) received from or made available to an institution through an act of a legislative body.

Associate degree: A degree granted for the successful completion of a sub-baccalaureate program of studies, usually requiring at least 2 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work/study program.

Auxiliary enterprises: This category includes those essentially self-supporting operations which exist to furnish a service to students, faculty, or staff, and which charge a fee that is directly related to, although not necessarily equal to, the cost of the service. Examples are residence halls, food services, college stores, and intercollegiate athletics.

Bachelor's degree: A degree granted for the successful completion of a baccalaureate program of studies, usually requiring at least 4 years (or equivalent) of full-time college-level study. This includes degrees granted in a cooperative or work/study program.

Business and management: Instructional programs that describe the processes of purchasing, selling, producing, and interchanging of goods, commodities, and services in profit-making and nonprofit public and private institutions and agencies.

Cohort: A group of individuals who have a statistical factor in common, for example, year of birth.

College: A postsecondary school which offers general or liberal arts education, usually leading to an associate, bachelor's, master's, doctor's, or first-professional degree. Junior colleges and community colleges are included under this terminology.

Computer and information sciences: A group of instructional programs that describes computer and information sciences, including computer programming, data processing, and information systems.

Constant dollars: Dollar amounts that have been adjusted by means of price and cost indexes to eliminate inflationary factors and allow direct comparison across years.

Control of institutions: A classification of institutions of higher education by whether the institution is operated by publicly elected or appointed officials (public control) or by privately elected or appointed officials and derives its major source of funds from private sources (private control).

Consumer, personal, and miscellaneous services: A group of instructional programs that describes the fundamental skills a person is normally thought to need in order to function productively in society. Some examples are child development, consumer education, and family relations.

Consumer price index (CPI): This price index measures the average change in the cost of a fixed market basket of goods and services purchased by consumers.

Current dollars: Dollar amounts that have not been adjusted to compensate for inflation.

Current-fund expenditures (higher education): Money spent to meet current operating costs, including salaries, wages, utilities, student services, public services, research libraries, scholarships and fellowships, auxiliary enterprises, hospitals, and independent operations. Excludes loans, capital expenditures, and investments.

Current-fund revenues (higher education): Money received during the current fiscal year from revenue which can be used to pay obligations currently due, and surpluses reappropriated for the current fiscal year.

Doctor's degree: An earned degree carrying the title of Doctor. The Doctor of Philosophy degree (Ph.D.) is the highest academic degree and requires mastery within a field of knowledge and demonstrated ability to perform scholarly research. Other doctorates are awarded for fulfilling specialized requirements in professional

fields, such as education (Ed.D.) musical arts (D.M.A.), business administration (D.B.A.), and engineering
(D.Eng. or D.E.S.). Many doctor's degrees in both academic and professional fields require an earned master's degree as a prerequisite. First-professional degrees, such as M.D. and D.D.S., are not included under this heading.

Educational attainment: The highest grade of regular school attended and completed.

Educational and general expenditures: The sum of current funds expenditures on instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, and awards from restricted and unrestricted funds.

Engineering and engineering technologies: Instructional programs that describe the mathematical and natural sciences gained by study, experience, and practice and applied with judgment to develop ways to utilize economically the materials and forces of nature for the benefit of mankind. Includes programs that prepare individuals to support and assist engineers and similar professionals.

English: A group of instructional programs that describes the English language arts, including composition, creative writing, and the study of literature.

Enrollment: The total number of students registered in a given school unit at a given time, generally in the fall of a year.

Expenditures: Charges incurred, whether paid or unpaid, which are presumed to benefit the current fiscal year. For elementary/secondary schools, these include all charges for current outlays plus capital outlays and interest on school debt. For institutions of higher education, these include current outlays plus capital outlays. For government, these include charges net of recoveries and other correcting transactions other than for retirement of debt, investment in securities, extension of credit, or as agency transaction. Government expenditures include only external transactions, such as the provision of perquisites or other payments in kind. Aggregates for groups of governments exclude intergovernmental transactions among the governments.

Expenditures per pupil: Charges incurred for a particular period of time divided by a student unit of measure, such as average daily attendance or average daily membership.

First-professional degree: A degree that signifies both completion of the academic requirements for beginning practice in a given profession and a level of professional skill beyond that normally required for a bachelor's degree. This degree usually is based on a program requiring at least 2 academic years of work prior to entrance and a total of at least 6 academic years of work to complete the degree program, including both prior-required college work and the professional program itself. By NCES definition, first-professional degrees are awarded in the fields of dentistry (D.D.S or D.M.D.), medicine (M.D.), optometry (O.D.), osteopathic medicine (D.O.), pharmacy (D.Phar.), podiatric medicine (D.P.M.), veterinary medicine (D.V.M.), chiropractic (D.C. or D.C.M.), law (J.D.), and theological professions (M.Div. or M.H.L.).

Fiscal year: The yearly accounting period for the Federal Government, which begins on October 1 and ends on the following September 30. The fiscal year is designated by the calendar year in which it ends; e.g., fiscal year 1988 begins on October 1, 1987, and ends on September 30, 1988. (From fiscal year 1844 to fiscal year 1976 the fiscal year began on July 1 and ended on the following June 30.)

Foreign languages: A group of instructional programs that describes the structure and use of language that is common or indigenous to people of the same community or nation, the same geographical area, or the same cultural traditions. Programs cover such features as sound, literature, syntax, phonology, semantics, sentences, prose, and verse, as well as the development of skills and attitudes used in communicating and evaluating thoughts and feelings through oral and written language.

Full-time-equivalent (FTE) enrollment: For institutions of higher education, enrollment of full-time students, plus the full-time equivalent of part-time students as reported by institutions. In the absence of an equivalent reported by an institution, the FTE enrollment is estimated by adding one-third of part-time enrollment to full-time enrollment.

Full-time instructional faculty: Those members of the instruction/research staff who are employed full-time as defined by the institution, including faculty with released time for research and faculty on sabbatical leave. Full-time counts exclude faculty who are employed to teach less than two semesters, three quarters, two trimesters, or two 4-month sessions; replacements for faculty on sabbatical leave or those on leave without pay; faculty for preclinical and clinical medicine; faculty who are donating their services; faculty who are members of military organizations and paid on a different pay scale from civilian employees; academic officers, whose primary duties are administrative; and graduate students who assist in the instruction of courses.

Full-time enrollment: The number of students enrolled in higher education courses with total credit load equal to at least 75 percent of the normal full-time course load.

Full-time worker: In educational institutions, an employee whose position requires being on the job on school days throughout the school year at least the number of hours the schools are in session. For higher education, a member of an educational institution's staff who is employed full-time.

General educational development (GED) test: A test administered by the American Council on Education as the basis for awarding a high school equivalent certification.

General program: A program of studies designed to prepare students for the common activities of a citizen, family member, and worker. A general program of studies may include instruction in both academic and vocational areas.

Geographic region: One of four regions used by the Bureau of the Economic Analysis of the U.S. Department of Commerce, the National Assessment of Educational Progress, and the National Education Association, as follows: (The National Education Association designated the Central region as Middle region in its classification.)

Northeast

Connecticut
Delaware
District of Columbia
Maine
Maryland
Massachusetts
New Hampshire
New Jersey
New York
Pennsylvania
Rhode Island
Vermont

Southeast

Alabama
Arkansas
Florida
Georgia
Kentucky
Louisiana
Mississippi
North Carolina
South Carolina
Tennessee
Virginia
West Virginia

Central (Middle)

Illinois
Indiana
Iowa

West

Alaska
Arizona
California

Kansas
Michigan
Minnesota
Missouri
Nebraska
North Dakota
Ohio
South Dakota
Wisconsin

Colorado
Hawaii
Idaho
Montana
Nevada
New Mexico
Oklahoma
Oregon
Texas
Utah
Washington
Wyoming

Government appropriation: An amount (other than a grant or contract) received from or made available to an institution through an act of a legislative body.

Government grant or contract: Revenues from a government agency for a specific research project or other program.

Graduate enrollment: The number of students who hold the bachelor's or first-professional degree, or the equivalent, and who are working towards a master's or doctor's degree. First-professional students are counted separately. These enrollment data measure those students who are registered at a particular time during the fall. At some institutions, graduate enrollment also includes students who are in postbaccalaureate classes but not in degree programs.

Graduate record examination (GRE): Multiple-choice examinations administered by the Educational Testing Service and taken by applicants who are intending to attend certain graduate schools. Two generalized tests are offered, plus specialized tests in a variety of subjects areas. Ordinarily, a student will take only the specialized test that applies to the intended field of study.

Graduate student: A student who holds a bachelor's or first-professional degree, or equivalent, and is taking courses at the post-baccalaureate level. These students may or may not be enrolled in graduate programs.

Gross national product (GNP): The total national output of goods and services valued at market prices. GNP can be viewed in terms of expenditure categories which include purchases of goods and services by consumers and government, gross private domestic investment, and net exports of goods and services. The goods and services included are largely those bought for final use (excluding illegal transactions) in the market economy. A number of inclusions, however, represent imputed values, the most important of which is rental value of owner-occupied housing. GNP, in this broad context, measures the output attributable to the factors of production--labor and property--supplied by U.S. residents.

Higher education: Study beyond secondary school at an institution that offers programs terminating in an associate, baccalaureate, or higher degree.

Higher education institutions (general definition): Institutions providing education above the instructional level of the secondary schools, usually beginning with grade 13. Typically, these institutions include colleges, universities, graduate schools, professional schools, and other degree-granting institutions.

Higher education institutions (traditional classification):

4-year institution: An institution legally authorized to offer and offering at least a 4-year program of college-level studies wholly or principally creditable toward a baccalaureate degree. In some tables a further division between universities and other 4-year institutions is made. A "university" is a postsecondary institution which typically comprises one or more graduate professional schools (also see **University**).

2-year institution: An institution legally authorized to offer and offering at least a 2-year program of college-level studies which terminates in an associate degree or is principally creditable toward a baccalaureate degree.

Humanities: Instructional programs in the following fields: area and ethnic studies, foreign languages, letters, liberal/general studies, multi/interdisciplinary studies, philosophy and religion, theology, and the visual and performing arts.

Independent operations: A group of self-supporting activities under control of a college or university. For purposes of financial surveys conducted by the National Center for Education Statistics, this category is composed principally of Federally Funded Research and Development Centers (FFRDC).

Inflation: An upward movement in general price levels that results in a decline of purchasing power.

Institutional support: The category of higher education expenditures that includes day-to-day operational support for colleges, excluding expenditures for physical plant operations. Examples of institutional support include general administrative services, executive direction and planning, legal and fiscal operations, and community relations.

Instruction: That category including expenditures of the colleges, schools, departments, and other instructional divisions of higher education institutions and expenditures for departmental research and public service which are not separately budgeted. Includes expenditures for both credit and noncredit activities. Excludes expenditures for academic administration where the primary function is administration (e.g., academic deans).

Labor force: Persons employed as civilians, unemployed, or in the armed services during the survey week. The "civilian labor force" comprises all civilians classified as employed or unemployed.

Mandatory transfer: A transfer of current funds that must be made in order to fulfill a binding legal obligation of the institution. Included under mandatory transfers are debt service provisions relating to academic and administrative buildings, including (1) amounts set aside for debt retirement and interest and (2) required provisions for renewal and replacement of buildings to the extent these are not financed from other funds.

Master's degree: A degree awarded for successful completion of a program generally requiring 1 or 2 years of full-time college-level study beyond the bachelor's degree. One type of master's degree including the Master of Arts degree, or M.A., and the Master of Science degree, or M.S., is awarded in the liberal arts and sciences for advanced scholarship in a subject field or discipline and demonstrated ability to perform scholarly research. A second type of master's degree is awarded for the completion of a professionally oriented program, for example, an M.Ed. in education, an M.B.A. in business administration, an M.F.A. in fine arts, an M.M. in music, an M.S.W. in social work, and an M.P.A. in public administration. A third type of master's degree is awarded in professional fields for study beyond the first-professional degree, for example, the Master of Laws (LL.M.) and Master of Science in various medical specializations.

Mathematics: A group of instructional programs that describes the science of logical symbolic language and its application.

Metropolitan population: The population residing in Metropolitan Statistical Areas (MSA's). See **Metropolitan Statistical Area**.

Metropolitan Statistical Area (MSA): A large population nucleus and the nearby communities which have a high degree of economic and social integration with that nucleus. Each MSA consists of one or more entire counties (or county equivalents) that meet specified standards pertaining to population, commuting ties, and metropolitan character. In New England, towns and cities, rather than counties, are the basic units. MSA's are designated by the Office of Management and Budget. An MSA includes a city and, generally, its entire urban area and the remainder of the county or counties in which the urban area is located. A MSA also includes such additional outlying counties which meet specified criteria relating to metropolitan character and level of commuting of workers into the central city or counties. Specified criteria governing the definition of MSA's recognized before 1980 are published in **Standard Metropolitan Statistical Areas: 1975**, issued by the Office of Management and Budget.

New MSA's were designated when 1980 counts showed that they met one or both of the following criteria:

- Included a city with a population of at least 50,000 within their corporate limits, or

- Included a Census Bureau-defined urbanized area (which must have a population of at least 50,000) and a total MSA population of at least 100,000 (or, in New England, 75,000).

Natural sciences: A group of fields of study which includes the life sciences, physical sciences, and mathematics.

Nonmetropolitan residence group: The population residing outside Metropolitan Statistical Areas. See **Metropolitan Statistical Area**.

Nonresident alien: A person who is not a citizen of the United States and who is in this country on a temporary basis and does not have the right to remain indefinitely.

Part-time enrollment: The number of students enrolled in higher education courses with a total credit load less the 75 percent of the normal full-time credit load.

Personal income: Current income received by persons from all sources minus their personal contributions for social insurance. Classified as "persons" are individuals (including owners of unincorporated firms), nonprofit institutions serving individuals, private trust funds, and private noninsured welfare funds. Personal income includes transfers (payments not resulting from current production) from government and business such as social security benefits, military pensions, etc., but excludes transfers among persons.

Physical and life sciences: Physical sciences are instructional programs that describe inanimate objects, processes, or matter, energy, and associated phenomena. Physical sciences include astronomy, astrophysics, atmospheric sciences, chemistry, geology, physics, planetary science, and science technologies. Life sciences are instructional programs that describe the systematic study of living organisms. (See also Science). Life sciences include biology, biochemstry, biophysics, and zoology.

Postsecondary education: The provision of formal instructional programs with a curriculum designed primarily for students who have completed the requirements for a high school diploma or equivalent. This includes programs of an academic, vocational, and continuing professional education purpose, and excludes a vocational and adult basic education programs.

Private school or institution: A school or institution which is controlled by an individual or agency other than a State, a subdivision of a State, or the Federal government, which is usually supported primarily by other than public funds, and the operation of whose program rests with other than publicly elected or appointed officials.

Proprietary institution: An educational institution that is under private control but whose profits derive from revenues subject to taxation.

Racial/ethnic group: Classification indicating general racial or ethnic heritage based on self-identification, as in data collected by the Bureau of the Census or on observer identification, as in data collected by the Office for Civil Rights. These categories are in accordance with the Office of Management and Budget standard classification scheme presented below:

White: A person having origins in any of the original peoples of Europe, North Africa, or the Middle East. Normally excludes persons of Hispanic origin except for tabulations produced by the Bureau of the Census, which are noted accordingly in this volume.

Black: A person having origins in any of the black racial groups in Africa. Normally excludes persons of Hispanic origin except for tabulations produced by the Bureau of the Census, which are noted accordingly in this volume.

Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

Asian or Pacific Islander: A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes, for example, China, India, Japan, Korea, the Philippine Islands, and Samoa.

American Indian or Alaskan Native: A person having origins in any of the original peoples of North America and maintaining cultural identification through tribal affiliation or community recognition.

Salary: The total amount regularly paid or stipulated to be paid to an individual, before deductions, for personal services rendered while on the payroll of a business or organization.

Scholarships and fellowships: This category of college expenditures applies only to money given in the form of outright grants and trainee stipends to individuals enrolled in formal coursework, either for credit or not. Aid to students in the form of tuition or fee remissions is included. College Work Study funds are excluded and are reported under the program in which the student is working. In the tabulations in this volume, Pell Grants are not included in this expenditure category.

Scholastic Aptitude Test (SAT): An examination administered by the Educational Testing Service and used to predict the facility with which an individual will progress in learning college-level academic subjects.

Science: The body of related courses concerned with knowledge of the physical and biological world and with the processes of discovering and validating this knowledge.

Social and behavioral sciences: A group of scientific fields of study which includes anthropology, archeology, criminology, demography, economics, geography, history, international relations, psychology, sociology, and urban studies.

Social studies: A group of instructional programs that describes the substantive portions of behavior, past and present activities, interactions, and organizations of people associated together for religious, benevolent, cultural, scientific, political, patriotic, or other purposes.

Technical/professional fields: A group of occupationally-oriented fields of study, other than engineering and computer science, which include agriculture and agricultural sciences, architecture, communications, health sciences, home economics, law, library and archival sciences, military sciences, parks and recreation, protective services, and public affairs.

Trade and industrial occupations: The branch of vocational education which is concerned with preparing persons for initial employment or with updating or retraining workers in a wide range of trade and industrial occupations. Such occupations are skilled or semiskilled and are concerned with layout designing, producing, processing, assembling, testing, maintaining, servicing, or repairing any product or commodity.

Tuition and fees: A payment or charge for instruction or compensation for services, privileges, or the use of equipment, books, or other goods.

Undergraduate students: Students registered at an institution of higher education who are working in a program leading to a baccalaureate degree or other formal award below the baccalaureate such as an associate degree.

University: An institution of higher education consisting of a liberal arts college, a diverse graduate program, and usually two or more professional schools or faculties and empowered to confer degrees in various fields of study.

Visual and performing arts: A group of instructional programs that generally describes the historic development, aesthetic qualities, and creative processes of two or more of the visual and performing arts.

Vocational home economics: Vocational courses of instruction emphasizing the acquisition of competencies needed for getting and holding a job or preparing for advancement in an occupational area using home economics knowledge or skills.

Year-round, full-time worker: One who worked primarily at full-time civilian jobs for 50 weeks or more during the preceding calendar year.

SOURCES:

National Center for Education Statistics, *Combined Glossary: Terms and Definitions From the Handbook of the State Educational Records and Reports Series*, Washington, D.C.: U.S. Government Printing Office, 1974.

Handicapped Children, 34 Code of Federal Regulations S 300.5 (1986).

National Center for Education Statistics, *A Classification of Instructional Programs*, Washington, D.C.: U.S. Government Printing Office, 1981.

The McGraw-Hill Dictionary of Modern Economics, New York: McGraw-Hill, 1975.

National Education Association, *Estimates of School Statistics, 1984-85*, Washington, D.C., 1985.

Shryock, H.S., and Siegel, J.S., *The Methods and Materials of Demography*. Washington, D.C.: U.S. Government Printing Office, 1975.

U.S. Department of Education, Office for Civil Rights. 1984. Elementary and Secondary School Civil Rights Survey, *Individual School Report* (ED 102).

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